DOCUMENT RESUME

ED 029 139 08 VT 008 373

By-Alschuler, Alfred, And Others

Achievement Motivation Development Project. Interim Report Section 1.

Harvard Univ., Cambridge, Mass.

Spons Agency-Office of Education (DHEW), Washington, D.C.

Bureau No-BR-7-1231

Pub Date Feb 69

Grant-OEG-0-8-071231-1747

Note-212p.

EDRS Price MF-$1.00 HC-$10.70

Descriptors-*Academic Achievement, Changing Attitudes, Control Groups, Course Evaluation, Developmental Programs, Educational Environment, Experimental Groups, High School Students, *Individualized Curriculum, Junior High School Students, *Learning Motivation, Literature Reviews, *Motivation Techniques, Potential Dropouts, Questionnaires, Self Actualization, *Student Motivation

Identifiers-Achievement Motivation Development Project

Two objectives of this project were: (1) to discover what specific methods of arousing motivation are most effective for particular groups, and (2) to prepare instructional materials which will make the prototype achievement motivation course and motivational climates available to a wider number of educators. Attention is given to the methods (inputs) for arousing motives and ways of evaluating whether a motive has been aroused (yields). There are two general types of inputs: course inputs and environmental inputs. Course inputs may be placed in four groups: (1) teaching the achievement syndrome, (2) fostering goal setting, (3) providing cognitive supports, and (4) providing group supports. Environmental inputs are the opportunities and specific external cues for motives. Motivation is studied relative to potential high school dropouts, increases through structure and climate, and yields through individualized instruction. A related document is VT 008 366. (CH) -

PA-08

OE-BR

INTERIM REPORT
Project No. 7-1231
Grant No. 0-8-071231-1747

ACHIEVEMENT MOTIVATION DEVELOPMENT PROJECT

Alfred Alschuler
Harvard University
Cambridge, Massachusetts 02138

February
1969

U.S. DEPARTMENT OF
HEALTH, EDUCATION
AND WELFARE

Office of Education
Bureau of Research

VT008373

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY

INTERIM REPORT

Project No. [illegible] 7-1231
Grant No. OE-0-8-071231-1747

Achievement Motivation Development Project . [illegible]

2
Alfred Alschuler

3
Harvard University
Cambridge, Massachusetts Mob 30750

February 1969

The research reported herein was performed pursuant to a grant with the Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

U.S. Department of
Health, Education, and Welfare

4 Office of Education (DHEW), Washington, D.C. [illegible]
Bureau of Research

TABLE OF CONTENTS

Section I Background

Orientation and Summary ....p. i

Chapter 1 Introduction ....p. 1

Chapter 2 Research Methods ....p. 5

Chapter 3 Achievement Motivation Training for Potential High School Dropouts by David C. McClelland ....p. 13

Chapter 4 How to Increase Motivation Through Climate and Structure by Alfred Alschuler ....p. 26

Chapter 5 The Motivational Impact of Individualized Instruction at Washington Junior High School, Duluth, Minnesota by Alfred Alschuler and Margaret Ham ....p. 71

Chapter 6 An Evaluation of the Motivational Impact of Individualized Instruction at Meadowbrook Junior High School by Dora Zelnicker and Alfred Alschuler ..p. 157

Chapter 7 Conclusions: Research Summary and Preview of Forthcoming Research ....p. 188

Section II How to Develop Achievement Motivation: A Course Manual for Teachers (First Draft)

Preface and Acknowledgements ....p. iii

Chapter 1 Psychological Education: Its Origin, Character and Future by Alfred Alschuler ....p. 1

A Bibliography on Affective Education, Psychological Education, the Eupsychian Network, Curriculum of Concerns, Personological Education, Synoetics, Personal Learning, etc. by Terry Borton and Alfred Alschuler ....p. 21

Chapter 2 Learning the Achievement Motive: A Self-Directed Workshop for Teachers by James McIntyre ....p. 40

Chapter 3 Achievement Motivation, Its History and Impact on History by Alfred Alschuler ....p. 94

Chapter 4 How to Give an n-Ach Course to Adolescents by Diane Tabor ....p. 136

APPENDIX

Appendix 1 Teaching the Thought Characteristics ......p. 187

1.1 Test of Imagination ....p. 188
1.2 Teachers' Guide to Scoring ....p. 201
1.3 Learning Achievement Thinking: A Programmed Approach ....p. 229
1.4 The n-Ach Match Game ....p. 274
1.5 Some Other Suggestions ....p. 286

Appendix 2 Teaching the Action Strategies ....p. 290

2.1 The Ring Toss Game ....p. 291
2.2 The Darts Dice Game ....p. 297
2.3 The Origami Game ....p. 305
2.4 Models for Playing the Origami Game with Tinkertoys ....p. 343
2.5 Prototype Feedback Games and Activities ....p. 354

Appendix 3 Case Studies ....p. 360

Appendix 4 Cognitive Supports ....p. 429
- 4.1 Using the Propositions ....p. 430
- 4.2 Personal Change Project Part One ....p. 432
- 4.3 Individual Report Form Part I ....p. 438
- 4.4 The Admiration Ladder ....p. 444
- 4.5 Individual Report Form Part II ....p. 446
- 4.6 The Visit of the Emperor ....p. 453

Appendix 5 Goal Setting ....p. 462
- 5.1 Explanation of the Exhibits ....p. 463
- 5.2 Speech Given by Teacher to Recruit Students ....p. 468
- 5.3 Future Planning Manual ....p. 472
- 5.4 Individual Report Form Part III ....p. 489
- 5.5 Goal Setting Contract from Mastery-Oriented n-Ach Course ....p. 502
- 5.6 Seigel's Cure for Procrastinators ....p. 510

Appendix 6 Arlington High School Course Outline ......p. 516

TABLES AND GRAPHS

Section I Background

Table 3.1 Effects of n-Ach Training on Grade Point Average (GPA) of 10th Grade Male Underachievers ....p. 19

Table 4.1 Three Motivational Climates in Classrooms ..p. 32

Table 4.2 Motivational Structure of Games ....p. 41

Table 4.3 Comparison of Two 10th Grade Typing Classes on Intelligence and Ability ....p. 43

Graph 4.1 Increases in Average Net Words/min Typed by a Class Structured for n-Power (1965-66), and by a Class Structured for n-Ach and n-Aff (1966-67) ....p. 47

Graph 4.2 Progress in Mathematics Achievement on SAT for One Class (N=19) over 2 Years: (fourth grade-power teaching, play learning; fifth grade-n-Aff teaching, n-Ach learning) ....p. 54

Table 4.4 Number of Students Gaining Below, Equal, or Greater than Expected Average Math Achievement in the Fourth and Fifth Grades (N=14)........................p. 55

Table 5.1 Median Income, and Curriculum Program for Elementary Schools Feeding into Washington Junior High School ....p. 83

Table 5.2 Mean I.Q., ITBS, and Age for II and Traditional Samples (Male, Female, and Total) ....p. 85

Table 5.3 Occupational Distribution of Fathers of II and Traditional Students ....p. 86

Table 5.4 Mean Scores and t-Test Results on Motivational Yields for II and Traditional Males (Fall, Spring, and Fall-Spring Change) ....p. 97

Table 5.5 Mean Scores and t-Test Results on Motivational Yields for II and Traditional Females (Fall, Spring, and Fall-Spring Change) ....p. 98

Table 5.6 Analysis of Variance on n-Ach Change from Fall to Spring ....p. 100

Table 5.7 Mean Change in n-Ach from Fall to Spring by I.Q. and Program (based on Cell Means from the Analysis of Variance ....p. 100

Graph 5.1 Mean Scores on the Iowa Test of Basic Skills (ITBS) in 5th, 6th and 7th Grades for II and Traditional Groups (Male and Female) ....p. 103

Table 5.8 Comparison of II and Traditional Students on Participation in Group Activities and Hobbies (from Activities Survey Checklist, Spring, 1968) ....p. 105

Table 5.9 Number and Percent of II and Traditional Students who had at least One Job from Summer, 1967-March, 1968 ....p. 106

Table 6.0 Comparisons of CLP and Traditional Students at Meadowbrook Junior High School on Age, Intelligence, and School Achievement ....p. 172

Table 6.1 Comparison of CLP and Traditional Subjects at Meadowbrook Junior High School on Socio-Economic Status (as measured by father's occupation) ....p. 173

Graph 6.0 Changes in n-Pow from 8th to 9th Grade among CLP and Traditional Male and Female Students ....p. 176

Table 6.2 Mean n-Pow Scores for Experimental and Control Groups (Male, Female, and Total) at End of 8th and 9th Grade ......p. 177

Graph 6.1 Changes in n-Ach from 8th to 9th Grade among CLP and Traditional Male and Female Students ....p. 178

Table 6.3 Mean n-Ach Scores for Experimental and Control Groups (Male, Female and Total) in 1965 and 1966 .... p. 179

Graph 6.2 Changes in n-Aff from 8th to 9th Grade among CLP and Traditional Male and Female Students .... p. 180

Table 6.4 Mean n-Aff Scores for Experimental and Control Groups (Male, Female and Total) .... p. 181

Section II

First Draft of How to Develop Achievement Motivation: A Course Manual for Teachers and Appendix

Correlations of Reader n-Achievement Scores with Deviations from Expected Economic Gains .... p. 106

Table A Number of Bombay Businessmen who Engaged in "Unusual Entrepreneurial Activity" before and after an n-Ach Course .... p. 120

Subsequent Change in School Grades in Underachieving High School Boys .... p. 123

ORIENTATION AND SUMMARY

This interim report describes the research progress of the Achievement Motivation Development Project (AMDP) at the end of the third year of a five year grant from the Office of Education, Bureau of Research. AMDP has four major objectives:

1. Demonstrate that courses for developing achievement motivation given in schools can be effective for normal and underachieving adolescents.
2. Discover what specific methods of arousing motivation are most effective for specific groups.
3. Describe and create learning climates which are conducive to the growth of different motives and measure the effects of those climates.
4. Prepare instructional materials which will make the prototype achievement motivation course and motivational climates available to a wider number of educators.

These objectives will take the full five years to accomplish. A number of intermediate goals have been reached at the present time, but they are only componants in the final picture. Any general conclusions and recommendations would be premature if stated in this interim report. It is possible, however, to summarize what has been accomplished and what remains to be done. This summary is identical with a summary of the chapters in this interim report.

SECTION I RESEARCH

Chapter 1: Introduction

This chapter outlines the goals of AMDP, their relation to the past 20 years of research on achievement motivation and summarizes the five year project plan. This chapter is an overview. A more detailed summary of the research on n-Ach and the motive arousal courses given to adults may be found in chapter three of the teachers' manual, Section II, in this Interim report.

Chapter 2: Research Methods

This chapter describes the methods (inputs) for arousing motives and the ways we evaluate whether a motive has been aroused (yields). In general the strategy of change is to be eclectic in the use of inputs and highly focused on one type of yield, namely achievement motivation. This strategy provides maximum leverage for change. The overall research design involves the systematic addition and subtraction of groups of inputs and measuring the resultant effects on the yields.

There are two general types of inputs: course inputs and environmental inputs. Course inputs may be placed in four groups: (1) teaching the achievement syndrome, its component thoughts, actions and everyday life contexts, (2) fostering goal setting by raising expectations, conducting personal growth projects and measuring progress, (3) providing cognitive supports for the change, (i.e., reasons, values and self concept) (4) providing group supports for the change through warm personal relationships, new group ties and a special setting for the n-Ach course.

Environmental inputs are the opportunities and specific external cues for motives. These cues may be recognized and/or created by rearranging the type of scoring system, the locus of decision making and nature of the obstacles to success in the environment. The rationale and theory for this is presented in chapter four in Section I of this interim report.

These inputs are evaluated against three types of yields: actions, thoughts and attitudes. Action changes include such things as grade point averages, achievement test scores, constructive use of leisure time, and level of risk taking. Thought changes refer to increased spontaneous achievement thinking as measured by the Thematic Apperception Test. Attitude changes are measured by scales such as Self-Esteem, Test Anxiety, Fate Control and Value of Achievement. Collecting these multiple yield measures will allow us to identify the different achievement yields produced by different types of inputs.

Chapter 3: Achievement Motivation Training for Potential High School Dropouts

In this chapter McClelland reports the results of the first n-Ach course given to 14-15 year old "seat warmer" boys who were high probability dropouts. Of the 21 boys who started the five day training program, half dropped out before completing the course designed to increase their motivation.

Clearly we had to create better methods of getting and keeping the attention of these boys. Of the 11 who completed the course, their grade point averages increased significantly more than a matched control group. In addition, interviews with the boys indicated that the most important things in their life were work, career and school goals in comparison to the control group boys who significantly less often referred to these goals.

Chapter 4: How to Increase Motivation Through Structure and Climate

This chapter provides the theoretical and research support for a game theory model of environmental inputs to increase motivation. In addition, two applications to classrooms are reported. In a fifth grade mathematics class, the "learning" game was restructured to be more like a "business", with contracts negotiated with individual students to produce x number of correct math answers in an agreed upon time interval. Students bid on the number of answers in each chapter they would do correctly. The more they bid for, the more they could win, or lose if they failed to make their bid. Thus the bid system tended to increase reasonable risk taking. The results for the 16 students showed that they gained an average of three years on the Stanford Achievement Test in one Year, whereas the previous year with the same text series and same teacher in a traditionally structured classroom the same students gained an average of 0.2 of one year.

A restructured typing class for 10th graders also was shown to be superior in the end of year net words per minute typing speeds. In comparison to a traditionally structured typing class, all the students in the experimental class were typing faster than all the traditional students. These action yields resulted from changing the nature of the scoring system, changing the locus of decision making and changing the nature of the obstacles to be overcome in the course. We do not know if these structural inputs also increase n-Ach thoughts. Replications are being conducted to find this out.

Chapter 5: An Evaluation of the Motivational Yields of Individualized Instruction in Duluth, Minnesota

Based on the pilot studies in the math and typing classes we decided to conduct a large-scale evaluation of yields from a major attempt to change the motivational climate of a school system. Duluth, Minnesota began a program of "Individualized

Instruction" based on a "contract system" of teaching, in theory very similar to that used in the math class, described above. We attempted to measure the thought, attitude and action yields of this program in the seventh grade at Central Junior High School, the only place in Duluth where a carefully matched group of students on the traditional program could be obtained. The results showed that after two years there were no significant differences between students on the experimental program and traditional program in the amount learned as measured by the Iowa Test of Basic Skills. However, the experimental students learned significantly less the first year on the program and significantly more the second year. There were no simple program effects on changes in achievement, affiliation or power motivation. However, there were a number of second order interaction effects on these and other yield variables showing changes as a joint function of sex and program, I.Q. and program, etc. It seems clear that the experimental program is not equally beneficial for all students, nor for all students in the same ways. It also seems clear from observation and comparison to types of theoretically ideal motivational "learning games" that practical problems in the implementation of the experimental program kept it from obtaining more pronounced effects.

Chapter 6: An Evaluation of the Motivational Yields of the Continuous Learning Program (CLP) at Meadowbrook Junior High School, Newton, Massachusetts

A second evaluation study of the motivational yields of an innovational learning climate was conducted at Meadowbrook Junior High School, Newton, Massachusetts. Like Duluth, Meadowbrook uses contracts to govern students' work although these contracts are longer term, and more open ended. This learning structure and other opportunities for student responsibility, initiative and decision making were designed to increase students "sense of agency", or their feeling of being agents of their own behavior. Increased agency should be reflected in increased achievement motivation. A comparison of 50 experimental and 50 traditional students at the end of two and three years on the program revealed no group differences in the level of achievement motivation. However, the achievement motivation of the males in the traditional program and females in the experimental program went down between the second and third year significantly more than for the opposite sex on the same program. As in Duluth, the new program is not equally beneficial for all students. The hypothesis that a "sense of agency" (as measured by n-Ach) is increased by the CLP must be rejected.

Several additional approaches to the evaluation of the Meadowbrook program are underway. Attitudinal measures obtained at the end of the second and third year are being evaluated. New measures of changes in fantasy life are being created for the available Thematic Apperception Tests. The students being studied, now high school seniors, will be interviewed this year to investigate the possible long-term impact of their junior high school experience. Results of this study will be integrated with the results of the Duluth study and the results of a study in Quincy, Massachusetts started in the Spring of 1968.

Chapter 7: Conclusions: Research Summary and Preview of Forthcoming Research

This chapter recapitulates the results of research presented in the previous chapters and places it in two perspectives: the current research which emanated from past AMDP research, and other research being conducted on similar programs. After the initially favorable results reported by McClelland, AMDP has conducted 12 additional n-Ach courses designed to study the effects of age, sex, and types of course inputs on motivational yields. Results of these courses are being analyzed. Although the data we have at the present time is not overwhelmingly positive, it is consistently tantalizing and statistically, if not socially significant. In comparison to research on Sensitivity Training, for example, AMDP is conducting highly sophisticated research and demonstrating superior results. Further, with the emergence of Psychological Education as a movement (n-Ach is just one Psychological Education course) it is increasingly important that the effects of this type of training be studied. The preconditions for effective n-Ach courses will generalize to other courses thus making a contribution to the field of Psychological Education as a whole.

No specific policy recommendations are made in this chapter since this is an interim report.

SECTION II How to Increase Achievement Motivation: A Course Manual for Teachers (FIRST DRAFT)

This is the first draft of a teachers' manual based on our experience in giving n-Ach courses to adolescents, on the materials we have created and on what seems to work with students. There are three basic reasons why we cannot guarantee this manual: (1) as yet we do not have clear evidence that the n-Ach courses are outstandingly effective, (2) we do not know if the manual is effective in teaching teachers, and (3) the manual does not yet include guides to restructuring classroom environments to be conducive to motives aroused in the courses. Thus, we strongly recommend that the manual not be used at this time.

The manual now includes four chapters and extensive appendices with teaching materials. Chapter one describes the field of Psychological Education and puts achievement motivation training in this broader perspective. Chapter two is a set of instructions for a group of 6-8 teachers to give themselves an eight session n-Ach course. This provides the experience base for chapters three and four. In chapter three, the history of n-Ach is presented along with a description of the principles on which the courses are based and some early results of n-Ach courses. Chapter four is a complete "how-to-do-it" set of instructions for teachers to give an n-Ach course themselves. The entire manual will be revised in 1968-69 and submitted as an Interim Report sometime prior to the Final Report in September, 1970.

Chapter 1

Introduction

Ways of increasing motivation in adolescents are being explored in a Harvard Graduate School of Education project under the supervision of Dr. David C. McClelland and the direction of Dr. Alfred S. Alschuler. A better understanding of the nature and origins of achievement motivation has been the central concern of Professor McClelland's research since 1947. His preoccupation began as a general interest in the topic of human motivation and a desire to discover a method of objectively measuring the strength of individuals' motives. His laboratory research on motivation and techniques for quantifying its presence soon led to a focus on achievement motivation, and later to studies of the role of "need for achievement" (n-Ach) in economic development. This research is summarized in two of Professor McClelland's books, *The Achievement Motive* (1953) and *The Achieving Society* (1961). and in Chapter 3 of the teachers manual in section II of this interim report.

In the last five years, McClelland's research focus has shifted from the exploration of the social origins and national economic consequences of achievement motivation to the study of how the motivation of individuals can be increased. In the United States, Mexico, Spain, and India, businessmen have been given motive arousal courses which attempt to raise their achievement motivation. In the three and one-half years following the n-Ach courses these entrepreneurs have become significantly more energetic, resourceful and successful, demonstrating that motivation in adults *can* be increased for substantial periods of time, after *short*, intense motive arousal courses. The men for whom these courses were most successful had been "in charge" when they took the course. In their jobs, they had more decision-making freedom and responsibility than the men for whom the courses were less effective. This finding shows clearly that neither "making greater opportunities" nor increasing the man's motivation per se are as effective as the combination of increased motivation and a life situation conducive to that motive. This research is summarized in McClelland's book, *Developing an Achieving Society* (1969, in press).

Having demonstrated that adult motivation could be increased it seemed natural to ask whether the achievement motivation of adolescents could be increased. This is a socially significant problem because of the demonstrated relationship between n-Ach and an individual's economic viability, and because schools at present are doing almost nothing to directly increase students' motivation. We hoped to demonstrate that n-Ach courses, given with texts and materials we developed, could become a viable portion of the curriculum for normal and underachieving students. This purpose is an integral part of "ES-70" goals to develop methods of fostering students' motivation, psychological development and maturity.

Along with this socially significant objective, there were a number of important theoretical questions to be answered. Of the many methods used in n-Ach courses, which are most effective in increasing n-Ach? Do the most effective methods vary from one age group to another, or vary between males and females? Can we specify the general rules of school learning "games" which put students "in charge", which support and augment the n-Ach course? What are the motivational effects of making learning more "entrepreneurial" and more like a business, e.g. by stating explicit "learning objectives", "contracting" the work to students and making the "pay off" directly related to contracted output? Will this entrepreneurial type of learning, characteristic of much of the "ES-70" curricula, increase students' n-Ach?

Although this motive acquisition research is focused on developing n-Ach, our findings about the most effective methods of motive arousal should generalize to other equally valuable human motives, e.g. affiliation, curiosity motives. At the conclusion of this research and development project we should be able to state the basic principles of motive acquisition, as they have been empirically supported. These contributions should form the basis for a new Psychological Education curriculum in schools. Such a curriculum would use educational methods, procedures and equipment to increase specific valued aspects of mature adulthood.

In summary, there are four major objectives of AMDP.

1. Demonstrate that achievement motivation courses given in schools can be effective for normal and underachieving adolescents.

2. Discover what specific methods of arousing motivation are most effective for specific groups.

3. Describe and create learning climates which are conducive to the growth of n-Ach; measure the effects of these climates.

4. Prepare instructional materials for dissemination which will make the prototype n-Ach course and motivational learning climates available to a wider number of educators.

Work toward these objectives started in the fall of 1965 when McClelland and Alschuler began a five-year systematic study of motive acquisition in adolescents under the sponsorship of the Harvard Research and Development Center. In August of 1967 funding for this research was continued under a direct grant from the Division of Adult and Vocational Education. This interim report describes the activities and progress in the third year (1967-68) of the five-year project. A synopsis of the five-year project plan follows:

YEAR 1 (1965-66)

- Literature search
- Locate and establish relationships with cooperating secondary schools.
- Begin devising course materials appropriate for adolescents.
- Pilot test materials in a course.

YEAR 2 (1966-67)

- Train teachers to give achievement motivation courses.
- Give a series of achievement motivation courses systematically varied to isolate the course and situational inputs most responsible for the motivational yields.
- Develop additional course materials.

YEAR 3 (1967-68)

- Collect follow-up data on initial achievement motivation courses.
- Train additional ES-70 teachers and collaborating researchers from other institutions.
- Continue giving systematically varied achievement motivation courses.
- Begin evaluating the motivational yields of different learning climates.
- Collect course materials into teacher and student course manuals and books (1st drafts).

YEAR 4 (1968-69)

- Analyze and write up results of YEAR 2 courses.
- Collect follow-up data of YEAR 3 achievement motivation courses.
- Continue evaluating the motivational yields of different learning climates.
- Try out the teachers' manual and course materials; Revise these course materials into the final drafts.

YEAR 5 (1969-70)

- Analyze and write up the results of YEAR 3 achievement motivation courses.
- Prepare a book of research on motive arousal courses for adolescents and on motivational yields of different learning climates (Final Report).
- Dissemination activities as appropriate (conferences, publications, workshops, training of selected ES-70 teachers, etc.).
- Phase-out.

The presentation of our work in the following pages is a lengthy Interim Report. The Final Report will be prepared in 1969-70 when all our results are analyzed, systhesized and coordinated with the motive acquisition research conducted by our colleagues in other universities. As indicated by the plan, in 1967-68 all of the courses for students and teachers were completed. At present we are collecting follow-up data on several hundred course participants, collating the teaching materials we have developed and analyzing the motivational yields of several different learning climates. Obviously, most of the research inaugurated in 1967-68 is not complete at this time. However, in the last year several sub-projects that were started earlier have been completed. These reports constitute our current research results and findings and are presented in this section, Chapters 3-6.

In Section II of this report we present the first draft text of the Teachers' Manual. This manual attempts to introduce teachers to the methods, principles and techniques in giving achievement motivation courses. It is meant to be a substitute for the more time-consuming and expensive teacher training courses we have given over the past three years. Unfortunately, this form of training only gains in efficiency what it loses in interpersonal dialogue. We will attempt to remedy this problem during 1968-69 when we write the final version of the manual. However, at this time the manual is not ready for wide-scale distribution or use by teachers.

Bibliography: Chapter 1

McClelland, D.C. The Achievement Motive. New York: Appleton Century Crofts (1953).

McClelland, D.C. The Achieving Society. Princeton: D. Van Nostrand, (1961).

McClelland, D.C. and D.G. Winter. Developing an Achieving Society, in press (1969).

Chapter 2

Research Methods

This research attempts to systematically vary motivational "inputs" in a series of achievement motivation courses and school climates in order to maximize the motivational yields. We have been as thoroughly eclectic as possible in choosing course inputs. Initially, any procedure is used for which there is some evidence supporting its efficacy. Broadly speaking, these inputs fall into two categories: course inputs and environmental inputs. Course inputs attempt to increase directly the frequency of achievement thoughts and actions in the person during and after the course. Environmental inputs attempt to re-structure the opportunities for achievement thoughts and actions in the school, for example, thus stimulating achievement motivation with increased external achievement cues.

The impact of course inputs, environmental inputs, or the combination of the two is measured in terms of 1) changes in actions, 2) changes in attitudes and 3) changes in the spontaneous frequency of achievement thoughts. Several yield measures are collected because different inputs may have different types of yields. For example, course inputs may change the frequency of achievement thoughts in a variety of situations, while environmental inputs may increase only achievement actions in the specific situation where there are achievement cues. By studying many types of inputs evaluated against several types of yields it is possible to say whether an input is effective, in what ways it is effective and under what conditions. These will be general specifications of the conditions for motive acquisition and should be applicable to other motives in addition to achievement motivation.

Motive arousal inputs and yields can be described at a theoretical level and a practical level. In this chapter a theoretical description is provided since it is the framework for all of our research projects. Specific examples of inputs and yields are given in the following chapters on research results and in Section III, the Teachers' Manual.

A. Motivational Yields [How do we know when achievement motivation has been increased?]

Achievement Action Tendencies (T): Achievement motivation training should increase a variety of behaviors specifically relevant to academic and career success: grades (Kolb 1965; Burris 1958; O'Connor, Atkinson, and Horner 1966), persistence (Feather 1962), risk taking (Atkinson 1957), initiative and constructive use of leisure time (McClelland *et al.* 1953). Other types of behavior which should be affected by achievement training include deportment in school, participation in extracurricular activities and perhaps even scores on standardized academic achievement tests. These behaviors are designated as "achievement action tendencies," or T, according to the theoretical model of Atkinson and Feather (1966).

Generalized Subjective Probability of Success (P_s): Achievement motivation training should increase important attitudes and beliefs about the possibility of attaining desired goals through hard work. In contrast, many students believe that "success is more a matter of luck or chance, and thus do not apply themselves diligently to working for what they want. The importance of this critical attitude is documented in the recent Coleman Report, *Equality of Educational Opportunity* (1966) and in the Harvard Educational Review issue, "Equal Educational Opportunity" (1968). Coleman found that differences in this attitude accounted for more variance in academic achievement than differences in teacher competence, curricula and physical facilities in schools. Both Coleman and Lefcourt (1966) state that very little is known about how to increase this belief in the possibility of succeeding through hard work. Translated into the theoretical framework of Atkinson and Feather, this yield variable is called the "generalized subjective probability of success," or P.

Motive Level (M): Achievement motivation training should increase the frequency and salience of achievement thoughts in the lives of adolescents. This is the key yield measure, since motives are patterns of goal-directed thoughts. Past research by Sontag (1967), McClelland (1966) and Skolnick (1966) show that the level of achievement motivation in the lives of adolescents predicts occupational choices and a variety of specific behaviors which occur fifteen to twenty years later. Thus, increasing the level of achievement motivation could and should have important long-term effects. In this research, yield measures reflecting the level of "motivation" will be designated by the letter M.

On the basis of theory and extensive validation research, Atkinson and Feather (1966) present the following general equation for describing action tendencies (T) and their relationship to motivation (M), the subjective probability of success (P) and the incentive value of success (I).

$$[T = M \times P \times I]$$

In achievement motivation:

$$[I = 1 - P]$$

Thus, by substitution:

$$[T = M \times P\ (1-P)]$$

or,

$$[T = M \times f\ (P)]$$

Stated concisely, the theoretical objectives of this project are to discover the most effective methods of increasing T, M and P in the 1 to 2 years following the experimental inputs. Stated below are some of the specific yield measures which will be used for the three types of variables.

T: Grade point average
Cognitive and achievement test scores
Entrepreneurial Acts Score (Activities Survey attached to this report)
Social Control (Deportment)
Level of risk taking

M: Fantasy measures of achievement, affiliation and power motivation through Thematic Apperception Test and French Test of Insight.
Reports of dreams

P: Internal vs. External Control of Reinforcement scales (Lefcourt 1966)
Debilitating Anxiety questionnaire scale (Alpert and Haber 1960)*

---

*According to Lefcourt, (1966) Debilitating Test Anxiety scale scores correlate at better than .80 with Internal vs. External Control of Reinforcement Scale scores. Thus, empirically they can be considered alternate measures of the same yield variable.

B. Motivational Inputs [How do you increase motivation?]

Course Inputs: On the basis of an exhaustive survey of the theoretical and research literature on personality change, McClelland (1965) has identified 12 propositions for increasing motivation. Because the evidence supporting these propositions and the methods of implementing them have been described at length elsewhere, only the propositions themselves are stated below:

Goal Setting

(i) The more reasons an individual has in advance to believe that he can, will, or should develop a motive, the more educational attempts designed to develop that motive are likely to succeed.

(ii) The more an individual commits himself to achieving concrete goals in life related to the newly formed motive, the more the motive is likely to influence his future thoughts and actions.

(iii) The more an individual keeps a record of his progress toward achieving goals to which he is committed, the more the newly formed motive is likely to influence his future thoughts and actions.

Motive Syndrome

(iv) The more thoroughly an individual develops and clearly conceptualizes the associative network defining the motive, the more likely he is to develop that motive.

(v) The more an individual can link the newly developed network to related actions, the more the change in both thought and action is likely to occur and endure.

(vi) The more an individual can link the newly conceptualized association-action complex (or motive) to events in his everyday life, the more likely the motive complex is to influence his thoughts and actions in situations outside the training experience.

Cognitive Supports

(vii) The more an individual perceives that developing a motive is consistent with the demands of reality (and reason), the more educational attempts designed to develop that motive are likely to succeed.

(viii) The more an individual can perceive and experience the newly conceptualized motive as an improvement in the self image, the more the motive is likely to influence his future thoughts and actions.

(ix) The more an individual can perceive and experience the newly conceptualized motive as an improvement on prevailing cultural values, the more the motive is likely to influence his future thoughts and actions.

Group Supports

(x) Changes in motives are more likely to occur in an interpersonal atmosphere in which the individual feels warmly but honestly supported and respected by others as a person capable of guiding and directing his own future behavior.

(xi) Changes in motives are more likely to occur the more the setting dramatizes the importance of self-study and lifts it out of the routine of everyday life.

(xii) Changes in motives are more likely to occur and persist if the new motive is a sign of membership in a new reference group.

The specific procedures implementing the twelve propositions, or combinations of them, are added and subtracted from achievement motivation training programs. The effects of the courses are evaluated in terms of the three types of yield measures. In this way we will be able to determine what procedures are most effective. Of necessity this research is programmatic. Results from early studies determine in part what specific combination of procedures are investigated in later studies. Since results are obtained and analyzed about one and one-half years after the courses have been given, this is long-term research requiring five years to complete satisfactorily.

Environmental Inputs: In addition to the n-Ach course inputs there are a number of situational factors which determine how much a motive will be aroused and how effective a motive will be in a specific situation. If n-Ach courses increase the motive but school, leisure time and home situations discourage n-Ach, the net effects of the courses will be less. Our project is attempting to discover and verify the general properties of these life situations which support or inhibit the growth of achievement, affiliation and power motives. These life situations may be seen as games, for analytic purposes, with implicit or explicit rules. By classifying these rules it is possible to diagnose the nature of the motivational game or climate that exists and the motive that situation encourages. The following is a brief description of this scheme for classifying the motivational demands of "games."*

Nature of the Scoring System

Zero-Sum scoring systems, such as grading on the curve, pull for power motivation since there are a fixed number of points to be divided among all individuals. One person's gain means automatically, another person's loss, thus making relative strength most important. Non-Zero Sum scoring systems, such as merit-badge progression in the Boy Scouts, pull for achievement motivation since each person is free to earn as many points as he can regardless of how well others are doing. Shared-sum scoring systems pull for affiliation motivation, since any point one person makes is a point for the team. In this way cooperation, coordination and teamwork are encouraged.

Locus of Decision Making

If a teacher makes most of the educational decisions about when and how things are to be done by students, power-compliance motivation is encouraged. Students must think about the power figure and deal with their own powerless, compliant position. If the individual student makes more of the decisions regarding what he wants to learn, how fast and in what way, his independence, self-reliance and achievement motivation are encouraged. When decisions are made by teams or groups, affiliative concerns are critical to the effective functioning of the group.

Obstacles

When the obstacles to making points are in another person, as when the teacher keeps the exam questions hidden until the examination, power-compliance concerns are raised in the students. On the other hand, when the obstacles to learning are inanimate (as when the student has to master material in a book) or when it is solely a question of needed personal skills, achievement motivation is aroused. When the obstacles to learning are in a group, affiliation motivation is aroused. This situation occurs whenever team projects are given requiring cooperation of the team members for progress to be made.

---

*A more complete presentation of this theory is presented in Chapter 4 of this report.

Given this diagnostic scheme it is possible to re-structure the classroom learning process and examine the motivational yields. This can be done without changing the content of what is taught, as has been done, for example, in Duluth, Minnesota with the introduction of "Individualized Instruction" and the "contract system," under the auspices of ES-70. Further, it is possible to give n-Ach courses and also provide the students with specially re-structured academic classes which encourage them to use the motive they have learned in the n-Ach course. It is also possible to structure the n-Ach course itself to be an n-Ach climate as the students learn about n-Ach. Through the cooperation of the Cambridge Friends School, Arlington High School, Meadowbrook Junior High School, all in Massachusetts, and Central Junior High School in Duluth, Minnesota, we have been investigating the impact of n-Ach courses and re-structured learning situations on students' motivation. Some of our early results are presented in the next chapters.

Bibliography: Chapter 2

Alpert, R. and R. Haber. "Anxiety in Academic Achievement Situations," Journal of Abnormal and Social Psychology, 66 (1960) 207-215.

Atkinson, J.W. "Motivational Determinants of Risk Taking," Psychological Review 64, (1957) 359-372.

Atkinson, J.W. and N. Feather. A Theory of Achievement Motivation. New York: John Wiley & Sons 1966.

Burris, R.W. "The Effect of Counseling on Achievement Motivation." Unpublished Doctoral Dissertation, University of Indiana, 1958.

Coleman, J. et al. "Equality of Educational Opportunity." National Center for Educational Statistics, U.S. Government Printing Office, Washington, D.C. 1966.

"Equal Educational Opportunity". Harvard Educational Review 38 (1968) entire issue.

Feather, N. "The Study of Persistence," Psychological Bulletin 59 (1962) 94-115.

Kolb, D.A. "An Achievement Motivation Training Program for Underachieving High School Boys," Journal of Personality and Social Psychology, 2 #6 (1965) 783-792.

Lefcourt, H.M. Internal Versus External Control of Reinforcement: a Review," Psychological Bulletin 65 #4 (1966) 206-220.

Chapter 3

Achievement Motivation Training for Potential High School Dropouts

by David C. McClelland[1]
Harvard University

In one of the earliest attempts to develop achievement motivation, Kolb (1965) showed that about 100 hours of instruction, given a few hours a day over a six-week summer course, improved subsequent grades of bright under-achieving high school students, provided they came from the middle class. Lower-class boys showed an initial improvement and then declined in school performance. Methods for giving instruction in n Achievement were later greatly expanded and tried out extensively for adult businessmen from various countries (McClelland and Winter, 1969). It seemed worth testing the usefulness of these improved methods on further samples of high school students.

An obvious target population is the group of boys who are popularly called "seat warmers"--those who dislike school and are basically waiting for their 16th birthday and a job opportunity so that they can drop out of school. They are a problem to the school, to their parents, and to themselves. Is there a chance that instruction in achievement motivation would help them stay in school and improve their attitude and performance?

The present report is a description of a pilot attempt to answer that question.

Procedure

Recruitment. In January 1966 a letter was sent by the Principal of a Boston suburban school system to 32 "seat warmers" in the 10th grade, inviting them to come to a one-hour presentation about the project. Twenty-two boys attended and heard the course described as something that would help them understand themselves better

McClelland, D.C. et al. The Achievement Motive. New York: Appleton Century Crofts (1953) 286-287.

McClelland, D.C. "Toward a Theory of Motive Acquisition," American Psychologist, 20 #5 (1965) 321-333.

McClelland, D.C. Commentary on Skolnick (1966).

Skolnick, A. "Motivational Imagery and Behavior Over 20 Years," Journal of Consulting Psychology, 30 (1966) 463-478.

Sontag, L. and J. Kagan, "The Emergence of Intellectual Achievement Motives," American Journal of Orthopsychiatry, 37 (1967) 8-21.

and improve their school work. They all knew they were in serious academic trouble, and were likely to be dropped from school if they did not improve. The course was scheduled for the week of their winter vacation in a rural residential setting on the edge of the Metropolitan Boston area. In individual interviews, 14 said they wanted to go, 2 said "No," and 6 said "Maybe." The program was also explained to the parents of the boys in an evening session at the school arranged for the benefit of those who were curious enough to attend. Parental permission to attend the course was required by the school. Eight boys showed up for the five-day session in the country, two of whom dropped out on the third day.

A second group was recruited in a similar manner for the April vacation. Alumni of the first course were paid to help in recruiting individuals after the general presentation which was attended by 26 out of the 41 invited. From this group and others contacted, 18 said they wanted to attend, 7 said "No," and 9 were in the "Maybe" category. Twelve actually showed up for the course (including 3 who had said "Maybe"), of whom 8 went home on the second day, and one of the third. An additional boy was brought along by an assistant trainer who was his parole officer to whom the boy had just been assigned after having been released from a detention home. So only 4 boys actually completed this course; two alumni of the first course joined them for the last 2 days.

Matched controls. This left a total of 10 boys who had completed the course and 11 who had been exposed to some of it and dropped out. Each boy was carefully matched for age, IQ, and grade point average in the five quarters before the training with a boy from the large group who had heard about the course, expressed an interest, but for one reason or another had not attended. No boy who had said "No" at the outset was included among the controls. Thus the trained and control groups were roughly equated for initial expressed interest in self-improvement. One might, of course, suppose that those who actually showed up had more motivation, but the supposition is probably incorrect on two counts: (1) many of the boys in the control group wanted to come but were genuinely prevented by the necessity of work, illness, etc., and (2) subsequent events showed that many who went were not so much interested in self-improvement as they were in having a good time.

Training. The courses were patterned almost exactly after those given for adult businessmen and fully described elsewhere (see McClelland and Winter, 1969). In fact, the key trainer was the same man, Shri M. S. Nadkarni, who had conducted the courses for Indian businessmen. He worked in collaboration with experienced teachers and guidance personnel from the Harvard Graduate School of Education and from the staff of the high school involved. The course inputs included learning about the achievement syndrome (how to write imaginative stories containing achievement imagery and act in games like a person with high n Ach--setting moderate goals, using feedback or performance to correct goals, etc.); some exercises in self-study: planning future activities after the course; and learning individual responsibility from group living.

The first course was, on the whole, quite successful. The six who stayed for the whole time became quite enthusiastic about achievement motivation, its effects on their own lives, and their role in spreading the concept to others in the school. In interviews about ten months later, they made comments like the following:

"Pretty good course. Smartens you up a little. Realize now school is important. Need it to go places. Try to better self and stay in."

"Liked all of it. Before I didn't care about things, my family, nothing. When I left the course, I really wanted to do something. Had a great talk with my father, before never exchanged two words with him. Now when I get bad marks, the n Ach course makes me feel guilty. I am keeping my marks up."

"Excellent, very good course. Learned how to run a business. Helped me decide what I want to do. When I was little I wanted to be a priest. Then decided hairdressing was the job for me. Came back from course and got addresses of schools. Before I was nervous, now I am relaxed and can talk to people."

The second course was a near disaster. A good many of the boys came prepared to cut loose, and they did. What happened can best be described in their own recollections eight months later:

"Stunk! Every time you asked the Indian guy a question, he asked a question back. It was up in a wilderness."

"Mass destruction. Did $1,000.00 worth of damage. Still had plenty of alcohol left. No restrictions. Kids not used to that kind of freedom. Went to our heads. Course brought out insanity. Think I got something out of listening to others anyway."

"Couldn't see the point of it. Saw no purpose to the games. Thought it was a waste. Everybody started with the idea of causing trouble. They went wild. Didn't get anything out of it."

"Had no respect for the group leaders. If stern, the kids would have stayed in line."

The leaders were pretty much the same as those in the first course and so were the procedures, but for a variety of reasons, the right atmosphere was not created. The boys brought liquor with them and responded to the responsibility thrust upon them by "going wild," not sleeping, being rude, not participating in the sessions, deciding they were a "bunch of kooks" the psychologists were trying to pick the brains of, etc. Not surprisingly, most of them left the second day, and they make up 9 out of the 11 of the "partly trained" group. Of the four who stuck it out, most of them had a more positive attitude toward the course later, but a negative attitude toward the "crazy kids" who had gone wild.

The "treatments" obviously leave much to be desired. The full course totaled about 50 hours and contained a full measure of practically all of the 12 inputs described elsewhere (McClelland and Winter, 1969). The partially trained group were exposed to about

10-15 hours of the course, consisting largely of the n Ach scoring system, a self-analytic group session, and some practice with the ring toss game designed to teach goal setting. They were also "exposed" to the prestige inputs of Harvard University, a scientific research project, etc., but obviously the prestige didn't "take," suggesting that what is more important than enumerating inputs in such courses is the total atmosphere they succeed in creating.

Results

Nearly all participants and controls were interviewed in December, January, and February 1966-67, some 8-10 months after training. Some were interviewed again in June 1967. Grades were obtained from the school and averaged for 5 quarters after the training, for a period lasting from February 1966 through March 1967 for the first course and April 1966 through June 1967 for the second course. One full participant dropped out of school and joined the army soon after the course. Four out of 28 in the total pool of control subjects studied dropped out. The numbers are too small to draw any conclusions about the effect of training on dropping out of school, though it should be noted that the course was not specifically aimed to keep the boys in school if it seemed better to them in terms of their carefully chosen goals to do something else.

The main results are summarized in Table 1 where the effects on individual boys from the fully trained group are set side by side with the changes occuring in their matched controls. The matching was done blind on the basis of the first 3 numbers after a boy's name only, without any knowledge of post-training grade point averages. Seven out of 9 of the fully trained boys gained at least a letter grade step in their averages (e.g., from D to D+, or .33 points), as contrasted with only 3 among the controls.

As far as could be determined from the school records, the 3 control boys who showed such marked "spontaneous" improvement had not received any special "treatment." Fisher's exact test shows that the p-value of obtaining such a difference by chance is less than .04 in the predicted direction. The trained boys' overall average rose from a solid D to a low C-, while the untrained controls went from a D to a D+.

As for the partly-trained boys who dropped out, their performance is compared with that of a new control group drawn from the same pool of subjects on an individual matching basis. Five of the subjects appearing in the first control group were also used here to produce close matching. Obviously the slight increase in the average for the course dropouts is more than equalled by a larger increase in their matched controls. As the dropouts themselves said, they got nothing out of the course. It is of some interest to know why they dropped out. Since a number of tests were given them at the outset, it is possible to check for initial differences in various characteristics. They did not differ from those who stayed on fantasy measures of n Ach, n Aff, or n Power, on IQ, on occupational level of father (predominantly skilled blue collar workers), on Debilitating Anxiety Test, on the extent to which they valued achievement or described themselves as internally controlled on Rotter's I-E scale. They only differed significantly on deCharms' (1962) self-esteem scale. Seven out of 11 of the dropouts scored above the group's median score as contrasted with

Table 3.1

Effects of *n* Ach training
on grade point average (GPA)
of 10th grade male underachievers

Full training			5 quarter GPA			Controls			5 quarter GPA		
Name	Age	IQ	Before	After	Change	Name	Age	IQ	Before	After	Chang
Steve	18/8	86	.60[1]	1.42	+.82	George	17/9	86	.90	1.04	+.24
Bill	17/7	90	1.44	1.60	+.16	Chris	18/5	82	1.28	1.46	+.18
Paul	16/9	102	.94	1.36	+.42	Ed	17/3	97	.92	1.00	+.08
Owen	16/9	122	1.18	(2.3)[2]	+1.12	Tom	17/0	120	1.12	2.24	+1.12
Joe	16/4	113	1.40	1.96	+.56	Mike	16/9	118	1.34	.94	-.40
Jimmy	16/3	105	.96	1.98	+1.02	Brian	16/8	107	1.16	1.34	+.18
Stephen	16/1	100	.86	1.20	+.36	Norman	16/6	89	.50	.30	-.20
William	16/0	105	1.20	.80	-.40	Ken	15/8	104	1.18	2.20	+1.02
Bob	16/0	111	.58[3]	1.78[3]	+1.20	Kim	15/9	103	.80	1.40	+.60
N=9						N = 9					
Average		104	1.02	1.60	+.58			101	1.02	1.32	+.30

Number gaining +.33 or better: 7

Partly trained[4] (N= 11)						Controls (N = 11)[5]					
		108	1.42	1.59	+.17			107	1.38	1.65	+.27

---

1. F = 0; D = 1; C = 2; B = 3; A = 4.
2. Family moved to another state; grades as reported by the boy, not exactly comparable but clearly a large improvement.
3. From another school.
4. Dropped out after 1-2 days of training.
5. 5 from the above control group used again here to produce close individual matching.

only 2 of the ten who stayed, $p < .05$. In other words, it looks as if it took greater self-confidence to go to the staff and ask to go home. The dropouts were also doing somewhat better in school so that they may have felt under less pressure to stay.

The better academic performance of the fully-trained boys after the course is also reflected in other measures, such as days absent from school, which appear to reflect attitude as well as actual illness. In fact, the boys refer to absences often as "skipping school." On the average, the two control groups and the partly-trained group were absent an additional day a quarter in the five quarters after the training as contrasted to the five quarters before. The fully-trained boys were absent one day less a quarter on the average. Or, to put it another way, 6 out of 9 of them went to school more often afterwards as contrasted with 3 out of 9 of their matched controls. The differences are not significant, but certainly suggest a better attitude toward school on the part of the fully-trained boys.

When the boys were interviewed at some length 8-10 months after training, there was still a marked difference in the attitude of those who had been fully trained, as evidenced by their answers to the interviewer's first non-directive question: "What are the most important things in your life? What are the most important things you do or think about now?" Among the 9 boys interviewed from the partly-trained group and the 10 from the two matched control groups, most of the answers concerned sports, having a car, playing in a band, or just getting out of school. Only 4 out of the 19 boys in these groups mentioned doing well in school or thoughts about work or a career. In contrast, every one of the 9 fully-trained boys mentioned serious education or work-related goals, most of them specific. Only one mentioned a sport as of prime importance to him, but that was because his whole family was in baseball, he was on the town champion team, and furthermore he felt he had to have a college education, which meant studying harder now. The difference between the fully-trained students and the others is highly significant, though it is hard to know, of course, how much they were talking to please someone who represented what was for nearly all of them still a very valuable and respected part of their lives. But the fact that they were able to give details of the plans they had made, or talks they had had about future jobs or schools, indicated that it wasn't all just giving what they knew to be a desired response. They were doing the things that they had said at the end of the course they were going to do. One example, which is fairly typical, will help give the tone of their reports to the interviewer.

Jimmy had decided at the course that he wanted to be a hairdresser. By the middle of his senior year in high school, he reports he will start in the June or September following. He picked it because it pays well and he has really put his mind to achieving his goal. He has a part-time job and will have saved about $500 to use for tuition at the school. He has applied to the school and has an invitation to come for an interview. He says that the course takes 1,000 hours and he can work in the daytime and go to the school at night. He plans to try to get a job at the telephone company while he is going to school, because it is better than the part-time job he has now at a dry cleaners. He is trying for the "honor roll for the first time since 3rd grade" and his grades are up (See Table 1). Obviously he has done a lot of concrete thinking about and planning for his future.

Even William, who is doing less well in school than before the course, says his main concern is "to make something of myself." He has an "urge to work on cars all the time," parks his car, starts to work on it, works for hours straight, forgets the time, doesn't even notice if it is raining, doesn't like school, wanted to go to a vocational school, but couldn't talk his father into it--who wouldn't even let him take the test for it. "My parents would never accept my being a mechanic." His problem, as he sees it, is how to make progress towards his goal in life, which involves mechanics. He has done more with mechanical drawing, but wonders if a four-year hitch in the Air Force won't be the best way to achieve his goal in the end.

Typical of the control boy reports is Ken's. He says sports are most important to him, football and particularly skiing--in winter, snow skiing, and in summer, water skiing. He also spends a lot of time with his girl and is a "bug on mechanics." He used to race go-karts, wants to race his car next year at the Connecticut dragway, has lost his license for speeding. He has never liked school and never does the work. He just hasn't done much serious thinking about his future.

Discussion

What exactly do the results show? It is reasonable to believe that five days of intensive training can significantly change school attitudes and performance, and perhaps even affect career planning beneficially? Certainly any such belief needs to be subjected to a healthy dose of skepticism. The numbers are small, and probably the least adjusted fully-trained boy is not included in the statistics because he dropped out and joined the Army. To be sure, there were dropouts among the controls too, and we can't be sure that the Army wasn't the right course for this boy, but there is certainly room for doubt that the course affected him much.

Furthermore, it must be remembered that the training didn't "take" at all for half the boys--particularly during the second training session, when the majority left after a day or two. Thus if the overall evaluation included every boy who had at least started the training, one would have to conclude that the project as a whole had failed to produce any effects. Isn't it unfair to draw inferences only from the improvement of those who stuck the training out? Doesn't that prove they were "better stuff" to start with?

So far as school performance is concerned, they weren't better, but worse off. And they had lower self-esteem. They appeared to have stayed partly out of weakness rather than ego strength. And it seems hardly fair either to include the effects of training on boys who really were not much exposed to it. Rather it seems sensible to conclude that giving such courses involves, above all, creating an atmosphere in which the boys are interested enough, and under sufficient control, to go through with all the training. While such a conclusion may seem so obvious as to be almost trivial, it does not figure largely in the literature on personality change. On the one hand, if positive results are obtained, as they were here for about half the group, then observers conclude it was "mere suggestion" or the "Hawthorne effect"--forgetting that such a statement means little because it is clear that sometimes suggestion "takes," and sometimes it doesn't. The problem is to find out how to create an atmosphere in which suggestion will take--which is another way of saying that far more than "mere" suggestion is involved. On the other hand, previous research has tended to try to isolate the "educational inputs" (games, fantasy, training, etc.) which are "really" responsible for what changes occur afterwards. Our experience here suggests that this isn't quite the right way to define the problem. It is not a question of this or that input which, when "applied" to pupils, produces this or that effect, but rather a question of what organizational or motivational inputs can create an atmosphere in which the boys are interested enough in the educational inputs to get something from them. The stress has to be more on the interest value of the inputs, and the structure of the learning situation, than on the exact nature of the study units themselves, at least for boys of this type who have already mentally "dropped out" of school learning situations. Viewed this way, one might conclude that putting on a motivation training course is something like putting on a play. If you succeed in capturing the audience's attention long enough, the message gets across.

Otherwise you have failed and the audience is not influenced. Clearly we have much to learn about how to capture this type of audience.

But even for those affected, how long will they stay changed? The results reported here included what happened for about a year after the training ended. So much else was happening as the course faded into the past, one might well wonder whether it could continue to influence them. Take Bob as a rather extreme example. The summer after the course, he attended an Upward Bound program which he liked very much. The following academic year, during which we evaluated him, he did very well indeed, at one point getting a number of honor grades in various subjects. But in the summer of 1967, he enrolled in another Upward Bound program, which he described as "lousy". He lost interest in school again, was "lazy," "bored," and received nearly all incompletes in the first quarter of the fall term. Was the effect of a couple of good experiences wiped out by a bad one? Or is he just the kind of boy who is erratic--sometimes serious, sometimes not? He now says he is getting down to work again,but there will doubtless be many ups and downs before he ends up adjusted one way or another to the adult world.

The most that can be said for the course is that it seemed to get those who stayed really thinking about their futures and in many cases planning more seriously to achieve goals they had at least tentatively set for themselves. It may not have increased their n Achievement so much as made them feel more self-confident in planning their futures. Even Bob is still thinking about his plan to open a clothing store.

It would be unwarranted to draw extensive conclusions of any kind from such a small pilot study. It gains in significance largely because it is one of the very few studies which shows that intervention can produce a significant improvement in performance of such "hard core" problem boys. Furthermore, the educational input is cheap compared to some of the expensive failures reported in the literature (e.g., the Cambridge--Somerville Youth Project, see McCord, 1964). For this reason alone, it seems worth following up the promise of the pilot study with a major effort to influence a large number of boys whose academic records make them candidates for being kicked out or for dropping out of high school.

Footnote

[1] This research resulted from the hard work and creative efforts of Manohar S. Nadkarni, Richard deCharms, Knowles Dougherty, John Lennon, Ron McMullen, Steven Solomon, Gordon Alpert, Jeffrey Griffith, David Kolb, and Jim Reed.

References

deCharms, R., and M. Rosenbaum. Self-esteem and overt expressions of agression. In Washburne, N.F. (Ed.), Decisions, Values and Groups Vol. II. New York: Pergamon Press-Macmillan, 1962, pp. 291-304.

Kolb, D. Achievement Motivation Training for Underachieving High School Boys. Journal of Personality and Social Psychology, 1965, 2, 783-792.

McClelland, D.C., and Winter, D.G. Developing an Achieving Society. New York: The Free Press, 1969.

McCord, W. and J. McCord. The Psychopath. Princeton, N.J.: Van Nostrand, 1964.

Chapter 4

HOW TO INCREASE MOTIVATION THROUGH CLIMATE AND STRUCTURE

by

Alfred Alschuler

When Kurt Lewin left Nazi Germany in the 1930's he had an established reputation as a "field theorist." Lewin and other field theorists believe that behavior is almost solely determined by stimuli in the environment. These field forces are so strong that individual personality differences play a relatively small role in shaping behavior. To demonstrate this belief, and simultaneously to help explain German compliance to Hitler's regime, Lewin, Lippitt and White (1939) created three boys' clubs, each with a different type of leader. The "autocratic" leader was stiff, formal, aloof, gave directions, made rules and did not participate in the boys' activities. The "laissez faire" leader was informal, friendly, gave no directions, made no rules and, in general, shared in whatever the boys wanted to do. The "democratic" leader was task oriented, helped the boys vote on what they wanted to do. He did not direct actions like the autocratic leader, nor did he let happy chaos emerge as did the laissez faire leader. He was a friendly co-participant in the tasks chosen by the boys.

Over time the three groups developed distinctly different social climates and behavior patterns. There were many more aggressive acts and scapegoating in the autocratic group. The boys were task involved and compliant, but only as long as the leader was present. When he left, anarchy quickly emerged. In contrast, when the democratic leader left his group, the boys continued their purposeful activities and group morale and cooperation remained high. In the laissez faire group the absence of the leader meant even more fun, and even less task involvement. Friendliness and "we-feeling remained high. After the three social climates were established for some time, the leaders switched groups. In this way it was possible to assess how much the club climate was due to the leader and how much due to the personalities of the boys. Lippitt and White (1958) concluded that in nearly all cases the social climate, rather than the personalities of the boys, was the principal determinant of behavior. When leaders changed, the climate and behavior changed.

This research study was extreme in several ways. The differences in climate were so striking that the statistical representations of these differences, though also striking, seem pale reflections of what happened. Psychological research seldom overwhelms one with such socially significant differences. The study also was extreme in the value-laden vocabulary used to describe the research e.g., scapegoating, autocratic, anarchy. Lewin must have been deeply impressed by the differences between the governing of Nazi Germany and the U.S. Yet, assessing three boys' clubs as if they were three nations is a large intellectual leap. In a film portraying this research the commentary sounds more like war propaganda than science.* It is very difficult to see anything good in a "Nazi" boys' club. Nevertheless, we do not condemn classrooms when they conform rather closely to the "autocratic" social climate as described by Lewin. There must be some advantages to such a learning climate for it to be so widespread and to have lasted so long. Perhaps different labels for the climates would make the advantages and disadvantages clearer.

Finally, the assumptions on which the research was based are extreme. At the time the research was conducted, orthodox Freudians were claiming that all behavior was determined by subconscious factors. The environment, from this point of view, was simply an empty stage on which individuals unknowingly acted out scripts, written when they were children. The two theories were on a direct intellectual collision course. Both, in fact, have been modified subsequently. Neo-Freudians have argued, contrary to Freud, that the conscious mind and environment are more important than Freud claimed. Social psychologists have been more explicit in stating how personality and environmental factors interact to produce specific behavior. Attempts to change behavior have concentrated both on altering internal states (e.g., achievement motivation training, psychoanalysis) and altering external conditions.

---

*The reader may see these climates on the film, "Three Experiments in Social Climates".

It is a fortuitous coincidence that Lewin's three climates illustrate the three motives most thoroughly studied by McClelland and co-workers: N-power, N-ach, and N-affiliation. Although the connection is intuitively obvious, descriptions of N-power and N-affiliation climates may help clarify the impact of the climates on the thoughts, feelings and actions of the boys clubs' participants. Individuals who have a strong need for power are concerned with influencing others and in gaining the means to influence. This goal dominates their thought patterns and can be measured through the TAT, in the same way as N-ach is measured. Such men seek leadership positions, often in industry, government or teaching where, by giving opinions, suggestions or orders, they can influence others. They tend to be seen by others as forceful outgoing, hard-hearted and demanding. It is less obvious that a high N-power leader forces compliance on his followers, which is a measure and guarantee of the leader's status. Whether such men are ruthless or benevolent depends not so much on N-power per se, but on the strength of other motives associated with their power concerns. If N-affiliation also is high, they tend to be benevolent. If N-aff is low, they are less concerned about the feelings of others and have a tendency to ride roughshod over opposition. Individuals with strong affiliation motivation are concerned with establishing, maintaining or restoring friendly, warm relationships. These concerns are reflected in compassionate acts, in attempts to mediate, or in relaxed convivial activity. Such people are less concerned with reaching a goal or attaining influence and are more concerned with immediate warm relationships. Men in supervisory jobs, psychotherapists, ministers and women more often than men have strong needs for affiliation.

The effect of leaders' power and achievement motivation on subordinates is well illustrated by Andrew's study of two business companies in Mexico (1967). The presidents of both companies had high power motivation. However, in one president N-power was combined with moderately high N-ach and a commitment to achievement values. This president fostered high N-ach in his immediate subordinates. The other president had authoritarian values, low N-ach and compliant subordinates. The effects on employees were clearly different. The first company was a thriving dynamic organization. The second company showed little growth, had high turnover rates, low morale and dissatisfaction among workers. The second company's president made most decisions himself and left little room for individual responsibility. The similarity to Lewin's boys clubs is obvious. From this point of view, we would say today that Lewin's autocratic leader was high in N-power, second highest in N-ach and very low in N-aff. The democratic leader was high in N-ach and N-aff, but low in N-power. The laissez faire leader was low in N-ach and N-power, but very high in N-aff. Most teachers who have high N-power, also have relatively high N-aff, contrary to Lewin's autocratic leader. Thus their classrooms are both efficient and less ruthless than pure autocratic groups.

MOTIVATIONAL CLASSROOM CLIMATES

The theory and research of John Atkinson (1964, 1966) combines the Lewinian emphasis on situational determinants of behavior and the elegance of the personality research on motivation. According to Atkinson the Tendency to strive for a specific goal (T) is the result of the strength of the person's Motive (M) and two other situational variables: the expected Probability of goal attainment (P) and the Incentive value of success (I).

$$[T = M \times P \times I]$$

Both P and I are aspects of each specific field situation. Starting from Atkinson's work, George Litwin (1966) has described these situational variables (P and I) in terms of social climate.

> Organizational Climate is a term to describe and summarize the patterns of expectations and incentive values that impinge on and are created by a group of people that live or work together. Organizational Climate is assumed here to be a property of work environments that can be perceived directly or indirectly by the people who live and work in these environments.
>
> Climates determine motivation and motivated behavior by subtly or blatently defining the "rights" and "wrongs" for each member of the organization. It is the climate of the group that leads different individuals to expect different kinds of rewards or punishments for various kinds of behavior. . . Organizational climate molds and shapes the motivation and behavior of every member of a work group through its effect on each member's perception of what is expected of him, and what he will "get" for doing a job a particular way (Litwin 1966).

Litwin and Stringer (1966) have identified six dimensions of climate, based on their own, and previous research. Variations along these dimensions determine what motives will be aroused. They describe these dimensions for business organizations, but it is clear that the dimensions are relevant to practically any organization, including schools and classrooms.

Six Dimensions of Organizational Climate*

1. Structure - the feeling the workers have about the constraints in their work situation; how many rules, regulations, and procedures there are. Is there an emphasis on "red tape" and "going through channels?"

2. Individual Responsibility - the feeling of "being your own boss"; not having to double-check all of your decisions. When you have a job to do, is it really *your* job?

3. Rewards - the feeling of being rewarded for a job well done. How fair is the pay and the incentive? How honest and fair are the managers when it comes to praising workers who are doing a good job? How fair are the punishments, and do they mean anything?

4. Risk and Risk-Taking - the sense of riskiness and challenge in the job and in the work situation. Are you encouraged to take calculated risks, or is "playing it safe" the best way to operate?

5. Warmth and Support - the feeling of general "good fellowship" and helpfulness that prevails in the atmosphere. Is it important to be well liked? Are employees encouraged to cooperate and be helpful?

6. Tolerance for Conflict - the feeling that management isn't afraid of different opinions, or conflict; the emphasis placed on "getting along" versus settling differences here and now. Are you encouraged to smooth over or confront conflict?

In order to get a better feel for how these dimensions vary to produce different motivational climates in classrooms the following summary table has been prepared.

---

*From Litwin (1966)

TABLE 4:1

Three Motivation Climates in Classrooms

Climate Dimensions	N-Power	N-Affiliation	N-Achievement
Degree of Structure	Many rules and regulations define specific behavior desired. Conformity is required.	Few rules and regulations. Informality and spontaneity are valued.	Rules designed to focus on high performance goals. Within the structure, the individual is free to set his own goals and to act with initiative to attain them.
Emphasis on Individual Responsibility	Individual responsibility is discouraged. Permission from the teacher is always required.	Individual responsibility is highly encouraged for setting goals and initiating action. No constraints are placed on the person by rules or the teacher.	Individual responsibility is encouraged, but within the broad limits defined by the rules, not by the teacher.
Risk taking	Risk taking is discouraged. The way to do well is to play it safe, to do what is required.	Few sanctions against failure, thus risk taking is encouraged and often is unrealistic.	Moderate risk taking based on feedback from previous performance is encouraged.
Warmth and Support	The teacher is cool, distant and formal. All students are treated alike. Interaction between students is discouraged.	The teacher tries to understand each student and to become friends with each one. Friendship among students is encouraged.	The teacher relates warmly to all students, but in the context of working on tasks. The task is more important than friendship.
Emphasis on Rewards vs. Punishment	Rewards and punishments are emphasized equally and are based on what the teacher considers fair.	Rewards are frequent; Punishments infrequent. Often rewards are given independent of the quality of performance.	Rewards are emphasized over punishments, but they are contingent on good performance.

Three Motivational Climates in Classrooms (cont.)

Climate Dimensions	N-Power	N-Affiliation	N-Achievement
Tolerance for Conflict	Conflicts and arguments are resolved by degree. The teacher is right. Students comply.	Conflicts and disagreements are explored and smoothed over in order to re-establish friendly relationships.	Conflicts and disagreements are confronted when they are related to, or interfere with, learning.

These thumbnail sketches describe pure types of classroom climate. Probably the most frequently occurring classroom climate is a mixture that emphasizes power motivation most, fused with achievement motivation, and with least emphasis on affiliation motivation.* Many factors contribute to the creation of a classroom or organizational climate: Leadership style, physical work environment, "traditions", formal rules. If students' motivation is to be increased, these factors must be carefully controlled. Controlling these factors requires a more thorough knowledge of how they contribute to classroom climate. In the remainder of this paper, the influence of explicit and implicit rules will be examined.

MOTIVATIONAL CLASSROOM STRUCTURES

The U.S. Government, industry, and schools are making increased use of games as a method of teaching complex subject matter from the art of diplomacy to vocational decision making.** In playing these educational games, constructed to simulate life situations, participants face dilemmas and choices which are more analogous to actual situations than in other didactic procedures. Proponants of learning through games say that such activity provides vicarious experience and increases a player's sense of efficacy (Boocock, 1966). However, in a review of the studies comparing learning through simulations versus other methods of learning, Cherryholms (1963) comes to the following conclusion:

---

*For a more pectoral description of this typical climate, the reader is referred to "Students' Achievement Motivation Can Be Developed", AMDP Working Paper #7.

**For a closer look at this new development in teaching, the reader is referred to the following articles listed by author in the bibliography: Bensen (1962), Bloomfield and Padleford (1959), Boocock (1963), Boocock and Coleman (1966), Coleman (1966), Cherryholmes (1963), Greenlaw, Herron and Rawdon (1962), Guetzkow (1959), Guetzdow et al. (1963), Kibbe, Croft and Nanus (1961), Robinson (1965), Robinson et al. (1966), Sprawls (1962), Thorelli and Graves (1964).

> Without exception no evidence was uncovered supporting the contention that participants learn more facts or principles than they would by studying in a more conventional manner (Cherryholmes, 1966, p. 5).

Cherryholmes also concludes that in every study there was striking evidence for increased student interest, involvement and motivation. At a general level this is not surprising. The shared expectations and incentives (climate) are created as much by the structure of the situation as by the teacher's style. Games have an exceptionally clear, defined structure via the rules. Perhaps this extreme clarity increased motivation more efficiently in contrast to "Life" and "Learning", where the rules are less clear. Still, many questions remain unanswered. What motives are increased? What kind of rules increase which motives? How can a knowledge of motivational games be applied to the classroom more systematically? Can the classroom itself be structured as a game? How do different classroom game structures promote different motivational climates? The model presented below outlines a diagnostic scheme for determining the motivational impact of different types of games. The model only focuses on how to diagnose achievement, affiliation and power games.

1. Games and Non-Games

Four characteristics distinguish a game from other forms of activity: (1) the rules which govern the activity are agreed upon in advance by the players, (2) the rules describe classes of behavior rather than specific actions, (3) there are obstacles to be overcome, (4) a scoring system is specified. In general games are more organized than "play" or "pastimes", but less organized than "rituals", all of which are "non-games". In "play" and other activities which merely pass time, there are no rules, no necessary obstacles to be overcome, and no scoring. In "rituals" (greeting formalities, graduations, funerals, etc.) the specific actions are defined, rather than classes of acceptable and unacceptable behavior. Also, scoring usually is not present. In general, games are more flexible than "rituals" and less open-ended than "play" and "pastimes."

By this definition most normal classroom teaching is not a game. Usually, all the rules are not completely specified in advance. Often this forces students to "test limits" in order to discover the unstated rules and boundary lines. This is necessary for would-be players, but from the teacher's point of view, limit testing is a discipline problem and a poor use of valuable learning time. Nor is classroom teaching a game when teachers specify the precise activities to be performed. This ritualized learning is clearest in older "learning by rote" methods, but is present today in slightly altered forms, e.g., making specific problem assignments in mathematics, learning through programmed texts. When rules are not agreed upon in advance, often classroom activity becomes a pastime; literally a way to pass time between more meaningful activities.

2. Structural definitions of Motivational goals

In scoring a TAT for N-ach, N-aff, or N-power the first decision to be made is what motivational goals are present e.g., excellence, friendship, influence. Similarly in diagnosing what motives are aroused by a specific game the first task is to determine what goals are defined by the structure. These goals may be identified by analyzing the nature of the scoring system, the nature of the obstacles and the locus of decision making.

a) Scoring systems

"0-Sum" scoring systems have a fixed number of points. When one player makes points, another player automatically loses points, the sum thus remaining a constant zero. Arm wrestling, cup play in golf, betting games, chess, grading on the curve "pull-over" games all have 0-Sum scoring systems. In "Non-0-Sum" games the number of points is not constant. Each player is free to earn as many points as he can, independently of how many points the other player makes, e.g., match play in golf, archery contests, pre-set academic grading standards, Boy Scout Merit badge progression. In "Shared sum" scoring systems when one player scores, it is a score for all players on his team . Almost all team sports from baseball to tug-of-war have "Shared-sum" scoring systems. "Shared-sum" scoring always occurs with O-Sum or Non-O-Sum scoring. The reverse is not true: "O-Sum" and "Non-O-Sum" scoring do not always occur with "Shared-sum" scoring.

"O-Sum" scoring systems structurally define power goals since points are awarded only when one side forces the other side to yield or when one side demonstrates superior power, influence or control. Inevitably in "O-Sum" grading systems, students are in direct competition with each other. Grading on the curve or by rank ordering scores is ultimately a "O-Sum" scoring system since how well a student performs is determined only by comparison to others. One highly effective strategy for doing well in "O-Sum" games is to sabotage other players. Weakening your opponant is just as effective as strengthening yourself. As in all power games sabotage (e.g., destroying other students' notebooks) is a valuable strategy.

"Non-O-Sum" scoring defines achievement goals since it gives greatest value to independent, self-reliant accomplishment. Contrary to "O-Sum" games, "Non-O-Sum" games can be played alone, without direct competition with others. In such cases, sabotage is not a useful strategy for making points. In "Shared sum" games affiliation motivation is salient since making points is a key method of "establishing, maintaining or restoring friendly interpersonal relationships." Anyone who has played on a consistently winning team knows how points lead to happy, friendly relationships among team members. Academic situations rarely are "Shared sum" games, thus missing the potential facilitating effect of high affiliation motivation.

Obstacles

In all games points are made when obstacles are overcome. The motivational goals of every game depend on the nature of the obstacles to making points. For example, N-aff is not particularly valuable to a boxer since the obstacle is the opponants's strength and skill. The boxer must demonstrate his influence over his opponant, not his ability to get along harmoniously. In general when the obstacle is the opponant's potency, N-power is a valued asset. N-ach is valuable when the obstacles are within the player himself. In target shooting, for example, the standards are fixed and inanimate. The player must overcome a variety of inadequate personal resources and skills to score. In some games, the obstacles are both the opponant's and the player's skills as in fencing, ice hockey and football. These games call for both power and achievement motivation. Obstacles to scoring also can exist within a team, its degree of cooperation, and combined strength. In such games the desire to perform in an effective coordinated manner is necessary, i.e., N-affiliation is important. Most complex team games have power, achievement and affiliation obstacles, thus calling forth triple motivation.

Many adolescents find sports more interesting and involving than studying. Perhaps this is because all three motives are so clearly and strongly invoked by complex team games. From this perspective, the classroom is neither complex, a team effort, nor a game. When students respond to their natural affiliation needs in the classroom, more often than not, they are obstructing the teacher's goals. There is a curious logic in this student response. When a teacher creates an N-power classroom, the obstacle to success is the teacher, his standards, his assignments, his disciplinary and rewarding power. As we have seen, sabotage is an appropriate strategy in power situations. What more effective way is there for students to demonstrate potency than to gang up on the teacher, to jointly sabotage the teacher's efforts. There is greater strength in friendly team effort, and often it is more fun.

c) Locus of Decision Making

Motivation is also a process of decision making. The goals which define different motives simultaneously define how decisions are made. Obviously the object of N-power is to make decisions for others, the object of N-ach, to make decisions for oneself, the object of N-aff, to make group decisions agreeable to the majority of members. Similarly the motivational character of games can be inferred from the decision-making process. In football, the quarterback makes decisions himself for the team. Thus a quarterback is encouraged by his position to demonstrate both achievement and power motivation. For the rest of the football players, compliance is required for the sake of affiliation and team power. In the classroom, carrying out the assignments often is less palatable since it is not in the service of power or affiliative goals agreed upon in advance. Students' compliance often is only in the service of the teachers' achievement goals and in the students interest in avoiding harm.

3. Structural Definitions of Extent

After a TAT has been scored for achievement, power or affiliation imagery, the coder searches for other subcategories in the scoring system. The number of subcategories found is a measure of the intensity or extent of the motive. Scoring is a two stage process of discovering the direction and extent of motivation. In games, the scoring system, obstacles and process of decision making, define the motivational directions of the game. Two factors define the extent to which those motives will operate: Maximum extent of strategy, and maximum extent of tactics.

a) Maximum extent of strategy

Strategy is the overall plan for attaining the goal. The maximum possible complexity, variety and extent of strategy possible in a game is roughly approximated a) by the number of different ways to score and b) by the number of times it is possible to score in a game. In chess the only way to score is by a checkmate, and as soon as the score is made, the game is over. In boxing, another power game, there are many ways to score and as many scores possible as there are rounds. Thus, power motivation should be more strongly aroused in boxers than in chess players. Similarly, power motivation should be more strongly aroused in a chess tournament than in a single chess game. Classrooms with many ways of earning points and more frequent opportunities to earn points should arouse stronger motivation than classes in which there is only one way to score and only one time to score.

b) Maximum extent of tactics

For any given method of making points (e.g., field goals, touchdowns, extra points in football) usually there are a number of different possible moves in preparing for that score (running, passing, punting). Tactics are the arrangement of moves to make a score. A rough index of the extent of tactics is the number of different moves possible in preparing for a score. In chess several of the most powerful tactics are "forks", "pins" and "checks". In some modern language classes taught solely by the aural-oral method only two tactics are used, verbal questions and memorization. The increasing popularity of multimedia classrooms have made larger numbers of learning tactics available to students. In classrooms as in games, the maximum number of tactics available is an indicator of how much motivation will be aroused.

Table 4.2 below, summarizes the scheme for analyzing the motivational structure of games.

TABLE 4:2

Motivational Structure of Games

Dimensions of Games	Motives		
	N-Achievement	N-Power	N-Affiliation
Goals:			
Scoring System	Non-O-Sum	O-Sum	Shared Sum
Obstacles	Personal	Opponant	Cooperation
Locus of Decision Making	Individual Player	Captain or Leader	Team
Extent:			
Strategy	1. Number of different ways to score 2. Number of rounds in game		
Tactics	1. Number of different ways to prepare for scoring		

According to this scheme there are practically no pure affiliation games. Perhaps this is because the real scores in affiliation are subjective, internal feelings.

Most ordinary affiliation activities are either unorganized, e.g., parties, mixers, or are simple, one-round activities with no score -e.g., stunts, gags, impersonations. Competition is central to games as defined above and inimical to pure affiliation activities. Affiliation motivation obviously does play a part in many competition games, but usually is in the service of other motives. If one were to rank order motives in terms of the emphasis given to them by the game structure, N-aff seldom would be the primary motive, at least according to this analytic scheme.

It should be clearer now how structural properties of games help create motivational climates! "The feelings workers have about the constraints in the situation", "the feeling of being your own boss", "the feeling of being rewarded for a job well done", "the sense of riskiness and challenge", "the feeling of general good fellowship", and "the feeling that management isn't afraid of different opinions". The structure and the leadership style probably are two most important situational factors which create the group climate and arouse motivation in group members.

TWO EXAMPLES OF CHANGES IN THE MOTIVATIONAL STRUCTURE OF LEARNING

No person is without motivation. People differ only in what motives are salient and strongest. Similarly there is no such thing as a classroom without a motivational climate or a motivational structure. Many teachers are unaware of the impact their climate and teaching structure have in arousing certain motives and depressing other motives. Two examples may help clarify how minor structural changes can have major effects on performance and involvement.

1. Restructuring a Business Education Typing Class.

In most high schools, business education classes are considered low level subjects for non-college bound students who must prepare in secondary school for vocations after graduation. For students with little interest in education, these classes are an institutionalized dumping ground. Discipline problems often are more frequent and severe than in the more prestigious college preparatory classes. Even the most well prepared, experienced business education teacher can face seemingly overwhelming non-course classroom problems. This was true of the teacher whose classes are described below. Before teaching high school typing and heading the business education department at a large suburban high school, this teacher was an assistant professor at a nearby college. Also, she is the author of several published texts on typing.[1]

TABLE 4:3

Comparison of Two 10th Grade Typing Classes on Intelligence and Ability

Tests	Classes		p
	1965-66 (N = 11)*	1966-67 (N =12)	
OTIS	m = 102.2	m = 104.7	N.S.
Nelson-Denny grade level	m = 101.0	m = 10.6	N.S.

---

[1] For further information contact Dr. Antonette Di Loretto; Head, Business Education Department; Arlington High School; Arlington, Massachusetts.

*Two students dropped typing class in the third quarter because of consistently poor work. They are not included in this sample of 11.

In 1965-66 this teacher taught an office-practice typing class for three quarters of the four quarter school year. Shorthand was taught in the fourth quarter. In 1966-67, the following year, toward the end of the first quarter, she decided to structure the typing class differently. Her decision was stimulated by an N-ach course she took with several other teachers, and by the low interest and involvement her students had shown for several years.

In both 1965-66 and 1966-67 the students in her class were comparable in intelligence as measured by the OTIS, and ability as measured by the Nelson-Denny Test. In both years the text, typing test material, typewriters, classroom and teacher were the same. Only the learning game was defined differently.

a) Scoring System

In both years the Non-O-Sum scoring system was used. An individual's final grade depended on his own performance in comparison to set standards.

b) Nature of the Obstacles, Strategy and Tactics

In 1965-66, as in most typing classes, progression through the text is taken to mean increased skill since exercises become more difficult. Lack of practice was assumed to be the only major obstacle. Greater practice would increase the gross number of words typed per minute (GW/M), and decrease the number of errors (E). Both of these elements are reflected in the final Net Words per minute (NW/M): NW/M = GW/M - (2 x E). These two measures (GW/M, E) reflect the extent of strategy. In 1965-66 the tactics were, practice and more practice, and still more practice.

In 1966-67 either GW/M could be increased, or E decreased, just as in the previous year. However, the number of tactics for accomplishing those goals were radically increased. Under the new structure all typing test material was inspected before taking the speed test. Difficult strokings were identified by the group and solutions discussed. Also, the students were encouraged to search for personal obstacles -e.g., heavy clanking rings, mental blocks, sitting position, etc. A variety of new tactics were discovered when the new obstacles were identified. The increased focus on personal obstacles and new tactics means that achievement motivation should be increased and be reflected in higher typing scores.

c) Locus of Decision Making

In 1965-66 the teacher decided by herself how many NW/M would earn what letter grades. This helped create the standard power teaching structure. In 1966-67 the teacher and the class determined how many NW/M would earn different letter grades. This shifted the structure towards N-affiliation, away from N-power.

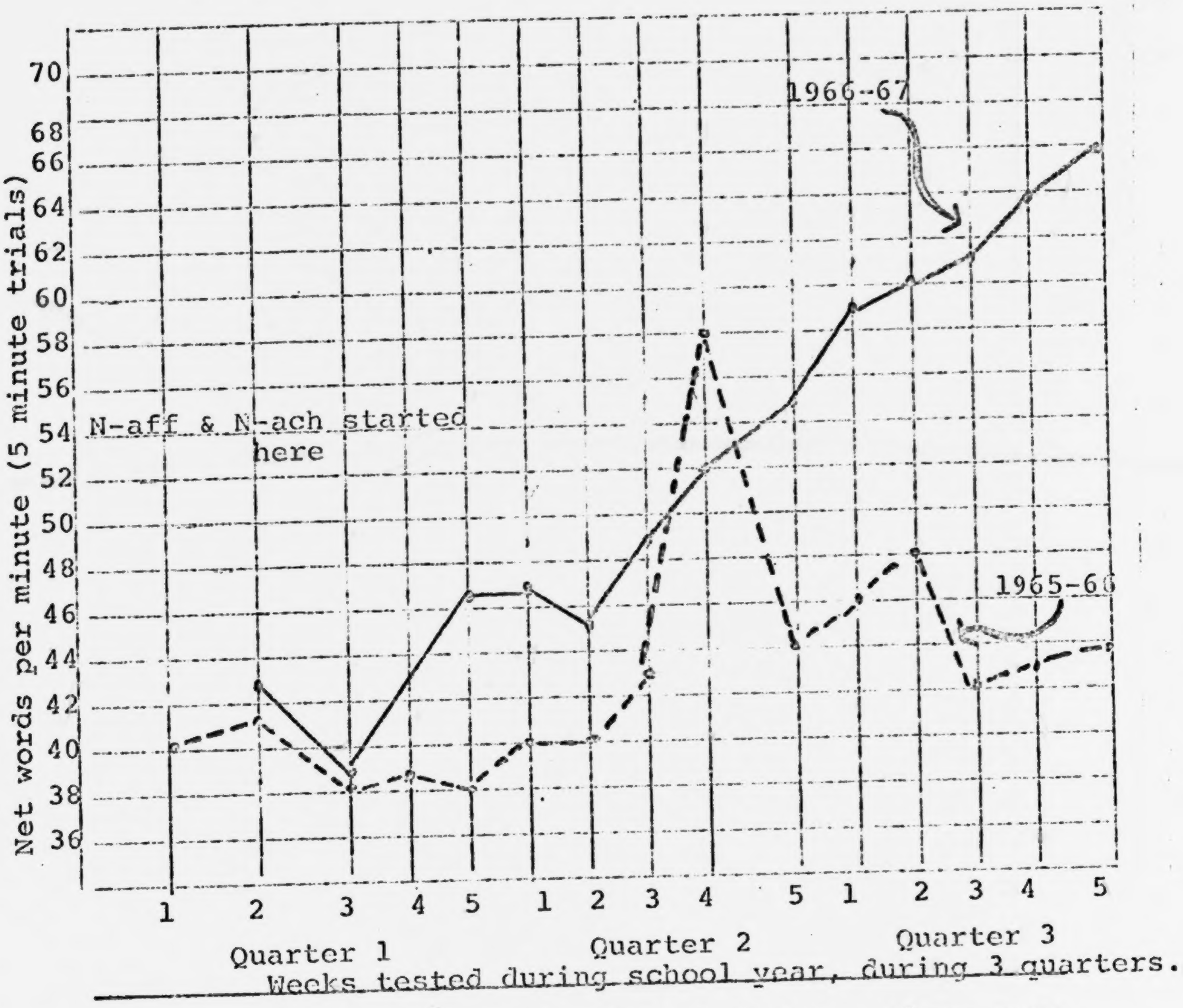
In 1965-66 all students' typing speeds were posted on a bulletin board once a month. The following year all students made dialy records of their speed growth. On the basis of this graph students were asked to set short and long-term scoring goals. This was not done the previous year. Almost every day in 1965-66 typing tests were given by the teacher, who chose their length. Every week only the best score of the week was counted towards the student's course grade. In 1966-67, students chose when they would take a test, and the length of the test appropriate to their chosen goals. They also chose whether or not to have the teacher record their score. However, each week students had to turn in at least one score for grading purposes. All of these changes shifted the locus of decision making from the teacher to the students and shifted motivational structure from power to achievement.

In summary, students took greater personal responsibility for setting moderate risk goals. They explored to a far greater extent what personal obstacles there were and what instrumental activity might be taken to overcome them. There was an equal amount of structure both years but it was more flexible and open to initiative the second year. Students determined fair rewards for their efforts. Cooperation was encouraged. In 1966-67 the structure and climate encouraged students to think and act like people with strong N-ach. In contrast during 1965-66 the class was structured primarily to increase power-compliance motivation. Graph 1 which is shown on the next page, presents the progress of the two classes over three quarters of the school year.

At the end of the third week of the first quarter, before N-aff, N-ach structure was introduced, there were no significant differences in the performance of the two classes, both averaging 39 NW/M. By the end of the third quarter the 1966-67 class average was 66 NW/M, 54% more NW/M than the 1965-66 class. At the end of three quarters, nine out of the ten students tested in the 1966-67 class did better than all eleven students tested in the 1965-66 class. The lowest scorer in the 1966-67 class was tied with the highest scorer in the 1965-66 class at 50 net words per minute ($\frac{x}{\sigma} = 4.46$, $p < .0001$, Mann Whitney U-Test, two-tailed). A further look at Graph 1 suggests that the students in the Power class may have lost interest toward the end of the third quarter with the advent of Spring vacation and the end of the typing class. By contrast, it appears that interest

GRAPH 4:1

Increases in Average Net Words/min typed by a class structured for N-power (1965-66), and by a class* structured for N-ach and N-aff (1966-67).



*In seven of the total 30 weeks of testing, there were between one and three students absent. There was no consistent pattern of absences among students. Thus, 7 out of 30 average NW/M listed on the graph are based on partial, but nearly complete data.

and effort remained high during the same period in the class structured for N-ach and N-aff. Unfortunately no TAT's were obtained from these students, thus making it impossible to tell if their N-ach and N-aff were increased beyond the classroom experience.

2. Restructuring a Mathematics Class

Elementary school mathematics classes can have problems similar to high school business education classes. Although the students are younger and the subject matter different, classes structured for power seem to generate the same problems (e.g., listless compliance, passive resistence, rebelliousness). In fifth grade it is especially popular to "hate math". These standard problems were encountered by a novice male teacher during his first full year of teaching. During the following summer this teacher decided to restructure the teaching to meet the needs of the age group and subject matter more appropriately. The following is a description of how the fifth grade math class was re-structured as a "Math Game".

The "Math Game" was modeled after a simulated "Business Game" (Litwin and Ciarlo, 1961) which was designed originally as a device for teaching achievement motviation. The Math Game content consisted solely of the text book, Elementary School Mathematics (Addison-Wesley, 1964). The students' activities were structured by the following "Math Game" rules:

---

* Much of the description which follows is adopted from an unpublished paper written by Mr. James McIntyre for the Achievement Motivation Development Project. The full reference is listed in the bibliography.

GOVERNMENT CONTRACTS

Each student contracted with the "Government Contract Officer", (the teacher) to produce a chosen percentage of correct answers in each chapter of the text. Contracts were made for one chapter at a time. The student chose his own deadline for completion of the chapter. The contract then was co-signed by the students and the Government Contract Officer.

Math Contract

The undersigned will attempt to do correctly_________ per cent of the problems in chapter________.

The sum of $________has been deposited with the government of the class for materials and franchise.

I understand that 10% of the gross return will be deducted from my payment for each day the contract goes unfulfilled after_____________________________.

I also understand that the contract may be revised at any time prior to one week before due date for a fee of $10.00. One per cent of the gross return will be deducted for each wrong answer below the number intended.

Date:_____________________

____
Contractor

____
Govt. Contract Officer

THE SCORING SYSTEM

The score was kept with play money of various denominations. Mathematics achievement was measured by the total amount of play money the student had earned. Each student was given $2,000.00 to start playing the game. After signing the contract, the student paid a fee for franchise and materials. This fee was directly proportional to the percentage of correct answers for which the student bid: the higher the percentage, the more the student had to pay initially. In order to earn the maximum amount for his chosen percentage, the student had to meet his contract obligations, both in per cent of problems correct and deadline. The amount of money he earned was directly proportional to the goal he set. The higher the percentage of correct answers he bid for and produced, the more money he earned. The schedule of payments is as follows:

Schedule of Payments

% Tried	Cost	Return	Rate
100	$500	$2,000	4-1
90	$450	$1,350	3-1
80	$350	$ 700	2-1
70	$250	$ 400	8-5
60	$150	$ 250	5-3
50	$100	$ 150	3-2

There also were three ways for the students to lose money. Although contracts could be revised or extended at any time, as long as the deadline was not less than one week away, a flat ten dollar fee was charged. Second, students could lose money if they did not produce the number of correct answers for which they contracted, each missing correct answer costing one per cent of the payoff. Were a student to contract for 70% in a chapter with 400 problems (i.e., 280 correct answers) and turn in a paper with only 270 correct answers, 10% would be deducted from his payoff. In this case the penalty would be $40.00, as the payoff on a 70% contract is $400.00. The students were under no restraint to stop working after reaching their percentage goal. They could protect their investment by doing more problems than contracted for. Thus they could hedge against possible errors and not lose as long as they had produced the required number of correct answers. The third way to lose money concerned deadlines. Since the student set his own time goals, the penalty for being overdue was severe. For each school day a chapter was late, 10% of the payoff was deducted. A student contracting for 100% correct answers (Payoff, $2,000) lost $200 for each day over the deadline.

DAILY PROGRESS CHARTS

In order to have an adequate self-assessment of daily work and progress, graphs were issued each Monday. The teacher specifically stated that he did not want to see them. They were entirely for the personal use of the students. An explanation of their use was given in the first session and thereafter they were only mentioned by the teacher when he passed them out each Monday. The graph merely consisted of the number of problems on the ordinate and the seven days of the week on the abscissa.

END REWARDS

End of the year rewards were given to the six highest money winners in the class. The rewards were of the class's own choosing, and the winners had their choice from the following list: rabbit, gerbil, slot-car kit, jug of candy. In addition, an ice cream party was promised to all those who completed the book by the end of the school year.

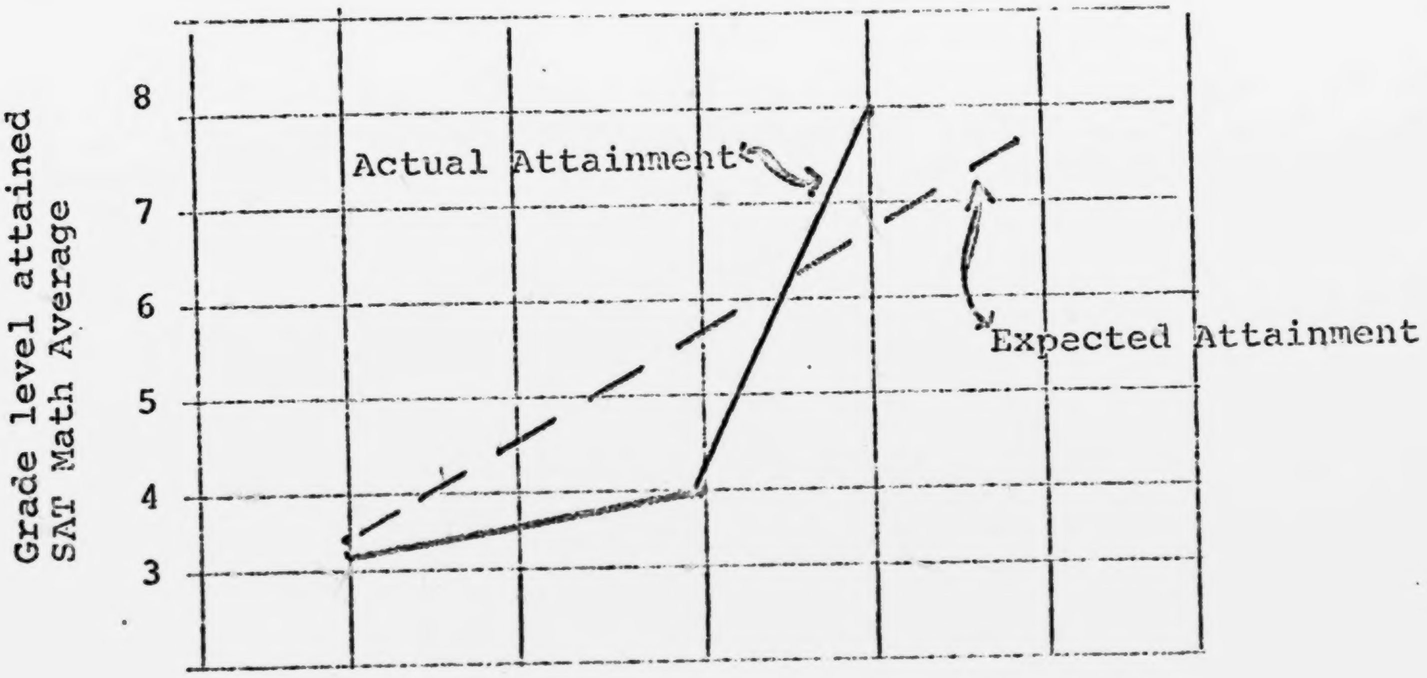
The scoring for the Math game was primarily a Non-O-Sum game, with the exception of the special prizes for the six highest money winners. The obstacles to scoring were quite clearly defined by ways to earn money and keep from losing money (ie., production of the number of correct answers contracted, no revisions of contract due dates, no overdue contract fulfillments). In each case the obstacles were within the player and required the player to develop action strategies characteristic of people with strong achievement motivation: accurate moderate risk taking, the use of feedback to modify goals. Decision making was almost entirely the personal responsibility of the students. They made their own assignments, determined their own pacing, worked through the book by themselves, and sought help from the teacher and friends as they decided they needed it. Often the students collaborated outside of class to discuss tactics for beating the game. In the process of lengthy calculation of the odds, they learned a good deal of practical mathematics. The teacher was able to establish a warm, friendly role as coach, consistent with the leadership style of people who foster N-ach climates. The teacher role as king of the classroom did not exist.

The math game was strikingly different from the previous year when the same teacher taught the same students using the same text book series. In the fourth grade no overall scoring was done, consistent with the beliefs of the private Quaker elementary school. Instead, written reports were given to parents periodically during the school year. The Stanford Achievement Test was given at the end of the year to inform teachers of their own success. Students were not informed of the results. Standardized chapter tests were given on completion of each chapter during the year as a general guideline for the teacher in pacing, preparing lectures, lessons and homework assignments. The school assumed that grades were unnecessary, an undue rush into the competitive world and detrimental to the spontaneous, genuine emergence of student interest in mathematics for the sake of mathematics. Obstacles to learning were not clearly defined by the structure, but were within the individual students more than in opponants' skill or group cohesion. Decision making was handled by the teacher. Other than the stated vague goal of learning mathematics, students were free to chose their goals, strategies, tactics. In practice however, the fourth grade mathematics class was a power-oriented play situation. In fact, students more often chose to ignore mathematics than to joyfully explore the elegant realm of mathematical logic.

During the same year this teacher was conducting the fourth grade class, an experienced teacher was teaching a different fifth grade class, structured like the fourth grade class, using the same text series, etc. Both the fourth and fifth grade traditional classes in 1965-66 can be used as comparison groups for the 1966-67 fifth grade class which learned by the Math Game. Since the full battery of Stanford Achievement Tests were given in the Spring of each year it is possible to make year to year comparisons in the mathematics gain scores. Graph 2 below, presents data on the progress of the same students in the fourth and fifth grades as measured by the Stanford Achievement Test (SAT) mathematics average.*

GRAPH 4:2

Progress in Mathematics achievement on SAT for one class (N = 19) over 2 years: (fourth grade -power teaching, play learning; fifth grade -N-aff teaching, N-ach learning.



Actual Grade Level at end of school year.

From March in the third grade to March in the fourth grade the average gain was 0.2 years, from 3.8 to 4.0. From March in the fourth grade to June in the fifth grade the average gain was 3.0 years, from 4.0 to 7.0 (expected gain is 1.3). This achievement spurt may be measured in a different way by comparing the number of students in the fourth grade who made at least the expected gain (1.0) with the number of students in the fifth grade who made at least the expected gain (1.3).*

---

* The math average is the average of math computation and math reasoning sub-test scores.

TABLE 4:4

Number of students gaining below, equal, or greater than expected average math achievement in the fourth and fifth grades (N = 14).+

SAT MATH AVE. GAIN

	Below expected gain	Equal or greater than expected gain
5th grade "Math Game"	0	14
4th Grade	12	2

$x^2 = 17.65$
$p < .0001$

When similar comparisons are made for the componants of the SAT Math Average (reasoning, computation) the results are virtually the same. An average gain of three years in a little over one year is striking especially in view of how poorly the same students did the previous year with the same teacher and text series. Alternate explanations can be given. 1. Was this growth spurt a general phenomenon of these fifth grade students in other classes as well? No, the average gain in years as measured by the SAT was, science (1.1), Social Studies (0.7), language (0.9), spelling (0.7), reading average (1.2). The growth was unique to mathematics. 2. Was the greater improvement in the fifth grade due to the greater experience of the teacher the second year he taught? This is possible but hardly would account for a 3.0 year gain by national norms. In addition, there is the comparison group of fifth graders taught by a teacher with 15 years of experience; His students gained an average of 0.6 years in mathematics attainment in one year (N = 15). 3. Was there a tendency for the students who were farthest behind at the end of the fourth grade to show the greatest gains during the fifth grade? No, there was a slight, but not significant tendency for the students farthest ahead at the end of the fourth grade to show the greatest gains in the fifth grade. The only major variables which could increase the actual gains were the new structure and climate created in the fifth grade.

---

* The expected gains differ in the two years because the number of school months between testings differs: 10 months vs 13 months, in a 10 month school year.

+Five of the 19 students missed one of the three years of testing. Because comparative gain scores were missing they are not included in this sample.

Other evidence, though less scientific, may be more persuasive to teachers, namely what happened to the individual children? Did they become grasping entrepreneurs and cut-throat businessmen" Did they work solely for the rewards? What were some of the other by-products of this structure? The teacher's impressions were very clear.*

Children who did nothing in mathematics in fourth grade, except under duress, suddenly began taking their books home on weekends. Very few deadlines were missed. Many students began assessing themselves more optimistically, yet realistically, and they performed up to those standards. One boy fidgeted through the entire year in mathematics in fourth grade. Threats and stern words could not focus his attention, nor could they keep him in his seat. His total output reflected a small percentage of his ability. Within the new structure, however, he chose his first goal of 70% with two weeks to finish the contract. Within three days he revised his goal upward to 100%, paid the extra fee, and did all the problems with only eleven errors out of almost 400 problems. A girl student was considered by the teacher to be mathematically slow when in the fourth grade. She was consistently at the bottom of the class and seldom handed in assignments at all. Her 100% contract for the first chapter was the first completed and with only six errors. Her error total was the lowest in the class. Four other girls in grade four found math an excellent time to do other things, such as writing notes to one another and surreptitiously playing with clay. In grade five they still clustered around each other, but when asked to be quiet, it was generally for disagreeing too loudly over mathematics problems (e.g., the exact way to program a function machine). All were punctual and accurate. Two other boys, performed well on occasion in grade four, but were constant behavior problems. They worked so diligently together in fifth grade that the teacher often forgot they were in the classroom. Another boy needed greater structure within which to work, but resented all adult structures given him. By setting his own limits and working at his own speed within a structure that he felt was his own, his work in mathematics was free from the anguish that once accompanied it.

---

* The following comments are summarized from McIntyre, 1966, pp. 7, 8.

Once during the year, several students decided to take a vacation from math for two weeks. They came to class and were allowed to relax, so long as they didn't disturb others. They had budgeted their time for the year and realized they could afford the vacation. After two weeks they returned to the task and successfully completed the year's work. It was the teacher's impression that in the first half of fifth grade, enthusiasm was generated more by the game than by intrinsic interest in mathematics. However, in the second half of the year, buoyed by new found competence, the game, prizes and play money became more or less irrelevant while the pace of work continued. Mathematics itself had become more interesting.

There are some major inadequacies in these research studies. Measures of motivation were not obtained at the beginning of the year, thus changes in motivation cannot be assessed accurately. Other questions remain. Do these structural changes influence motivation and activities outside the classroom? Do the changes generalize? Are there any negative effects? Further research will investigate these questions. For the moment, however, there is striking evidence that changes in the structure of learning can radically increase performance. These changes do not require elaborate, expensive and sophisticated new equipment. Minor but critical modifications in the way traditional materials appear sufficient to produce these changes.

MOTIVATIONAL STRUCTURES IN CULTURES

Education, whether it is formal or in the form of apprenticeship and rites of passage is a principal method of socializing the young into prevailing cultural values, beliefs and motives. McClelland (1961) has shown how child-rearing practices first introduce salient motives to children. We have seen how the structure and climate of formal education selectively strengthens motives in the process of teaching knowledge and skills. There are other ways in which a culture socializes individuals and shapes their motive hierarchy. We should examine a few of these other contexts of motive acquisition for several reasons. If education is to prepare students for full, effective participation in their culture, the choice of educational climates and structure should be based on the culture's prevailing motivational demands. This requires a diagnosis and understanding of cultural motives before the appropriate teaching climates and structure can be created. This approach, however, is conservative in its most basic sense, to conserve the existing order and resources. Education has an ameliorative purpose as well. Motive training also can serve this purpose once an analysis of the needed cultural motives is made. Finally, by looking at these other areas of motive acculturation, educators may discover new tactics for motive training in schools.

1. Games in Cultures

The games children play in a given culture do more than help them pass time. They serve to introduce children to predominant cultural motives in simple forms. A diagnosis of motives in actual games is one way of understanding cultural motive demands. In a series of articles, Roberts and co-workers have advanced a theory regarding the function of games in society (Roberts, Arth and Bush, 1959; Roberts and Sutton-Smith, 1962; Roberts, Sutton-Smith and Kendon, 1963; Sutton-Smith, Roberts and Kezelka, 1963; Sutton-Smith and Roberts, 1964; Roberts, Hoffmann and Sutton-Smith, 1965).

> The theory implies (1) that there is an overall process of cultural patterning whereby a society induces conflict in children through its child training processes; (2) that society seeks through appropriate arrays and varieties of ludic modes (game playing) to provide an assuagement of these conflicts by an adequate representation of their emotional and cognitive polarities in ludic structure, and (3) that through these models society tries to provide a form of buffered learning through which the child can make unculturative, step-by-step progress toward adult behavior (Roberts and Sutton-Smith, 1962).

Games model central issues in societies. In game playing children have the opportunity to face these issues and practice solutions. In this way they are prepared for the societal conflicts which they will face as adults.

Roberts' first step in substantiating this theory was to describe three types of games: skill, strategy and chance games. Skill games must involve skill and may or may not involve strategy or chance, e.g., marathon races, hockey, hoop and pole games. The defining property of skill games would categorize them, in general, as achievement games in our scheme. However, prizefighting is a skill game which involves power motivation. Thus, skill games are somewhat broader than pure N-achievement games as previously defined. In games of strategy, physical skill must be absent, chance may or may not play a part, but obviously, strategy must be present. Roberts _et. al._ (1959) list chess, go, poker and the Ashanti game of wori as examples, all of which we would classify as primarily N-power games because of their inevitable O-Sum scoring systems. Again, the translation is not perfect. "Strategy" games can have N-ach involved secondarily. The relationship between strategy games, N-power and acculturation is evident in the following comment:

> In a game of strategy, for example, he (the player) can practice deception against his powerful opponant and can even 'kill' him, but in addition he can also command his own forces, as he is commanded by those whom he normally obeys. (Roberts and Sutton-Smith, 1962, p. 183)

In chance games, chance must be present, skill and strategy must be absent. Our scheme excludes games of chance because they are not theoretically germane to N-ach, N-aff or N-power.

In Roberts' first attempt to validate his general hypothesis (Roberts, Arth and Bush, 1959) the researchers found that the presence of power games in societies was positively related to the degree and complexity of political integration. The number of chance games in cultures was positively related to the belief that the gods are non-aggressive and benevolent. Subsequent cross-cultural research by Roberts and Sutton-Smith (1962) showed that the frequency of skill and strategy games in societies were strongly related to emphasis in child-rearing practices on achievement and obedience, respectively. The frequency of chance games was related to stress on performance of routine duties and punishment for initiative. These two child-rearing practices should inhibit the growth of N-ach.

The data from Roberts and co-workers strongly indicates that games both teach and reflect central motivational concerns in societies whether primitive or advanced. From this point of view recess is not just a time for the itchy kids to blow off steam. It is a motivational learning time perhaps even more important than learning during social studies class about the eating utensils of Eskimos. It would be very easy to pick games for gym and recess which strenghten desired motives. Or, for example, it would be perfectly appropriate for Peace Corps volunteers, interested in promoting economic growth, to introduce a variety of new ludic activities calling for skill and N-ach. Games provide an opportunity for both cultural motive diagnosis and motive training.

2. Social Structure

If child rearing, adolescent game playing and motive training, through the process of education, are designed to prepare people for mature, effective adult lives, we must examine the context of adulthood to see which motives are most important to teach. If obedience and compliance are required in adulthood, then strengthening power-compliance motivation is critical. An analysis of the social structure status system can provide good clues for what motives are most important.

Robert LeVine (1966) has performed such an analysis on the status systems of three Nigerian groups; the Ibo, the Hausa and the Yoruba. Like McClelland (1961), LeVine makes a "culture lag" hypothesis, namely that cultural changes in motivation will be reflected in national statistics, such as rate of economic activity, up to two generations after these motivational shifts occur. LeVine differs from McClelland in looking to the social structure rather than to folklore for evidence of these shifts. LeVine assumes further that as the status systems change they require and recruit new motives. Thus an analysis of the status systems of the Ibo, Hausa and Yoruba in the latter 1800's should predict differences in the strength of different motives in school boys today. In his book, Dreams and Deeds (1966), LeVine presents data confirming his theory. The following is a summary of LeVine's description of the 19th century status systems in the Hausa and Ibo (the Yoruba are a complex mixture of both Ibo and Hausa systems).

The Hausa developed a "short-term autocracy" political system in which the kings of the empire ruled vassal states. The kingship was rotated among three ruling dynastic lineages. With each rotation went the right of patronage: some office holders were discharged and others of the king's choosing were installed. Office holders usually had responsibility for fiefs which they administered and from which they collected taxes, some of which they kept. During the tribal wars, office holders raised troops from their fiefs and in return, received booty and captive slaves from the king.

> So long as an office holder retained the favor of the king through demonstrations of loyalty and obedience, he was allowed to overtax and keep the surplus himself as well as to exceed his formal authority in a number of other ways. Thus the system had a despotic character, turning on relations and dependence and power between subordinates and their superiors. (LeVine, 1966, p. 26,27)

As a result, the principal method of rising socially was to become the client or follower of a person of greater status, to demonstrate worthiness by being loyal and obedient, and in turn by collecting additional followers for the patron. In these ways the fortunes of the patron were promoted and the follower's nomination to office was made more likely. Obedience led to office and office led to wealth.

> Clearly this system of status mobility placed a premium on loyalty, obedience and sensitivity to the demands of those in authority over a man; excellent performance in an independent occupational role, self-instigated action towards goals that did not benefit the competitive chances of a man's patron, did not yield the man's access to the major status rewards of the society and might conceivably damage his career. (LeVine, 1966, p. 30)

Implicit in this status system is the belief that there is a fixed and limited amount of goods. Access to those goods was dependant on the relative strength of the patron. Attaining and falling from office depended on compliance, submission and subservience to the patron. The status system scores were O-Sum and generated power-compliance motivation. Obstacles to success existed primarlily in the strength of other patrons. One way to change the balance of power was to collect new clients for a man's own patron. Innovation per se and developing one's own unique skills was not valuable. Obviously also, the locus of decision making was with the patron, not with the client.

In contrast, during the 19th century the Ibo were more than 200 politically independent tribes, each with their own status systems. In general, however, tribes reached decisions through councils of elders who were highly responsive to the needs and wishes of tribesmen. In addition, most tribes had title societies, entrance into which depended on acceptance by members, payment of entrance fees and providing a feast for the membership. The feasts, more than the other two requirements, effectively limited entrance to those of some financial means. Membership entitled the man to share other entrance fees, prestige and in some areas, political power as well. Most of the titles were not inherited, but were open to men who could earn them. Because there were many routes to earning the necessary fees, the status system encouraged men to determine for themselves what personal skills and knowledge were most useful. This emphasized a man's ability to make carefully calculated estimates of his ability, and to pursue his individual entrepreneurial goals. Higher status and power was granted on the basis of individual economic achievement, whereas in the Hausa, higher status granted greater wealth.

> Occupational performance was the primary locus of social evaluation and performing well enough as a farmer, trader or fisherman to obtain a title...required the continual application of his own efforts in the service of his individual goals (LeVine, 1966, pp. 35,36).

The clearest overall difference between the Ibo and the Hausa was the primary political orientation of the Hausa status system and the occupational emphasis in the Ibo status system.

Although not formulated in this way by LeVine, the Ibo system implied that there was an unlimited amount of goods, and that goods, whether political influence or money, could be shared (e.g., sharing the entrance fee to title elders). It was a Non-O-Shared Sum scoring system in which the obstacles to success were within the individual. Decisions were made either by the individual himself or by a group of equals. N-ach and secondarily N-aff were the most valuable cultural motives. These differences in motives and social systems indicate a few of the ways the Hausa and Ibo are likely to misunderstand each other. The Hausa are likely to view the Ibo as upstart radicals who threaten the social order by *their self-reliance*, independence and lack of compliance. The Ibo see the Hausa system as cramping individual initiative and as an equal threat to their own social structure. The conflict of obedience and independence that we see today in Nigeria and Biafra was present in less violent forms 80 years ago in the status systems of the two tribes.

The application of the "game" scheme method of analysis to larger cultural phenomena is given weight by Foster's analysis of traditional peasant societies

(Foster, 1965). Although not without his critics (Piker, 1966; Kennedy, 1966), Foster proposes that a universal characteristic of peasant societies is their belief in "the limited good." Whether it is land, wealth, friendship, honor, health, manliness or power, these goods are assumed to be fixed, finite and usually in short supply. Life is an O-Sum game. With respect to land in peasant societies this seems accurate and obvious. Other implications are not so clear. If good is limited within the society, new resources can be added only from outside the society e.g., lottery winnings, Peace Corps volunteers. Foster suggests that this view is the reason behind extensive lottery betting in many peasant societies. Peace Corps volunteers, who do not appreciate this O-Sum view of the world, can get into trouble. When they enter a village they are likely to try to make friends with the first people they contact, often their neighbors. However, since the Volunteers are a scarce new resource their alliance with one family can be seen by the others in the village as a disruption of the distribution of goods. Thus,in making the first friend, many potential future friends are alienated. Wealth also is assumed to be limited and fixed in quantity. If one family happens to have a large crop one year, it is thought to be at the expense of others or by special conniving. In order to placate these suspicions and fears the fortunate family must immediately use up the additional crop in a feast for the village. This distributes the gains equally and maintains the status quo. The excess is neither stored, bartered nor saved. Postulating a belief in O-Sum scoring helps explain this economically irrational behavior. Similarly fertilizing a field to increase crop output is a threat to the balance of the social order and represents deviant beliefs. In many Latin American peasant societies even blood is believed to be non-regenerative, thus, in fixed supply. It is believed that bleeding injuries permanently decrease the amount of a persons blood. Given this dominant cultural belief in limited goods, the ideas of improvement, increase, investment with returns all are threats to the existing order.

It is unlikely that formal education alone can transform a society's belief in O-Sum scores to Non-O-Sum socres. On the other hand, the very pervasiveness of these beliefs means that change agents are presented with opportunities to influence basic values at every turn, from the nature of children's games to beliefs about quantity of blood to the grading system used in schools. It should be evident at this point that teachers do not have a choice of whether or not to create a motivational climate and structure, but only whether or not they want to be aware of the particular motivational climate they are creating. The meta-classification of games presented in this chapter, by its very generality, is not a tight definitive model. It's value is heuristic in illuminating the motivational character of structures in many contexts. Those educators who wish to stop discouraging certain motives and start encouraging the growth of other motives can use this scheme to get hold of what has to be changed. Many examples have been given, but the application of the scheme to new situations always remains a problem of guided social innovation.

CHAPTER 4 BIBLIOGRAPHY

Andrews, J.D.W. "Achievement Motive & Advancement in Two Types of Organizations." Journal of Personality and Social Psychology, 6 (1967) pp. 163-168.

Atkinson, J.W. Introduction to Motivation, Princeton: Van Nostrand (1964).

Atkinson, J.W. and N. Feather (Eds.) A Theory of Achievement Motivation, New York: John Wiley & Sons, Inc. (1966).

Bensen, O. "Simulation of International Relations and Diplomacy", in H. Borko (Ed.) Computer Applications in the Behavioral Sciences, New York: Prentice Hall, (1962) pp. 574-595.

Bloomfield, L.P. and N.J. Padleford. "Three Experiments in Political Gaming", The American Political Science Review LIII (1959) pp. 1105-1115.

Boocock, S.S. "Effects of Election Campaign Game in Four High School Classes", Department of Social Relations, The Johns Hopkins University, Baltimore, Md. (1963) mimeographed report.

Boocock, S.S. "An Experimental Study of the Learning Effects of Two Games with Simulated Environments". American Behavioral Science (Oct., 1966) pp. 8-17.

Cherryholmes, C.H. "Developments in Simulation of International Relations for High School Teaching", Unpublished Masters thesis, Kansas State Teachers College (1963).

Cherryholmes, C.H. "Some Current Research on Effectiveness of Educational Simulations; Implications for Alternative Strategies." American Behavioral Science, (Oct., 1966) pp. 4-7.

Coleman, J.S. "Introduction: In Defense of Games". American Behavioral Science (Oct, 1966) pp. 3-4.

Elementary School Mathematics, Book V, Reading, Mass: Addison-Wesley (1965).

Foster, G.M. "Peasant Society and the Image of the Limited Good". American Anthropologist, 67 (1967) pp. 293-315,

Greenlaw, P.S., L.W. Herron and R.H. Rawdon. Business Simulation. Englewood Cliffs, N.J.: Prentice-Hall (1962).

Guetzkow, H. "A Use of Simulation in the Study of Inter-Nation Relations," *Behavioral Science* IV, (1959) 71-83.

Guetzkow, H., *et al*. "Simulation in International Relations: Developments for Research and Teaching." Englewood Cliffs N.J.: Prentice-Hall (1963).

Kennedy, J.G. "Peasant Society and the Image of the Limited Good: a Critique." *American Anthropologist*, 68 (1966) 1212-1225.

Kibbe, M., C. Croft and B. Nanus. *Management Games: A New Technique for Executive Development*. New York: Rineholt, (1961).

LeVine, R.A. *Dreams and Deeds, Achievement Motivation in Nigeria*. Chicago: The University of Chicago Press, (1966).

Lewin, K., R. Lippett and R.K. White. "Patterns of Aggressive Behavior in Experimentally Induced Social Climates" *Journal of Social Psychology* 10 (1939) 271-299.

Lippett, R. and R.K. White."An Experimental Study of Leadership in Group Life." In *Readings in Social Psychology*, (E.E. Maccoby and T.M. Newcomb, eds.) New York: Holt (1958).

Litwin, G.H. and J.A. Ciarlo. *Achievement Motivation and Risk-Taking in a Business Setting*, Technical Report. New York: General Electric Company, Behavioral Research Service (1961).

Litwin, G. "The Influence of Organizational Climate on Human Motivation." Paper presented to Conference on Organizational Climate, May 26-27, 1966, Fairlane Conference Center, Dearborn, Michigan.

Litwin, G.H. and R.A. Stringer. "Motivation and Organizational Climate," Graduate School of Business Administration, Harvard University (1966).

McClelland, D.C. *The Achieving Society*, Princeton: D. Van - Nostrand Company, Inc. (1961).

McIntyre, J. "The Math Game: An Achievement Motivating Structure for Mathematics Classes". Unpublished paper prepared for the Achievement Motivation Development Project, Graduate School of Education, Harvard University October (1966).

Piker, S., "The Image of the Limited Good: Comment on an Exercise in Description and Interpretation". *American Anthropologist*, 68 (1966) 1202-1211.

Roberts, J.M., M.J. Arth and R.R. Bush. "Games in Culture", *American Anthropologist*, 61 (1959) 597-605.

Roberts, J.M. and B. Sutton-Smith. "Child Training and Game Involvement." *Ethnology* 1, 2 (1962) 166-185.

Roberts, J.M., B. Sutton-Smith and A. Kendon. "Strategy in Games and Folk Tales", *Journal of Social Psychology* 61 (1963), 185-199.

Roberts, J.M. H. Hoffman and B. Sutton-Smith. "Pattern and Competence: A Consideraation of Tick-Tack-Toe". *El Palacio*, Autumn (1965) 17-30.

Robinson, J.A. "Simulation and Games", Department of Political Science, Ohio State University, Columbus, Ohio (1965) unpublished paper.

Robinson, J.A. *et al.* "Teaching with Inter-Nation Simulation and Case Studies", *The American Political Science Review*, LX (1966) 53-66.

Sprawls, R.C.,"Business Simulation." In H. Borko (Ed.) *Computer Applications in the Behavioral Sciences.* *New York: Prentice-Hall* (1962) 556-573.

Sutton-Smith, B. J.M. Roberts and R.M. Kozelka. "Game Involvement in Adults" *Journal of Social Psychology* 60 (1963) 15-30.

Sutton-Smith, B. and J.M. Roberts. "Rubrics of Competitive Behavior" *Journal of Genetic Psychology*, 105 (1964) 13-37.

Thorelli, H.B. and R.L. Graves. *International Operations Simulation*. New York: Free Press (1964).

Chapter 5

THE MOTIVATIONAL IMPACT
OF INDIVIDUALIZED INSTRUCTION
AT WASHINGTON JUNIOR HIGH SCHOOL, DULUTH, MINNESOTA

Alfred Alschuler and Margaret Ham

The purpose of this research is to examine the impact of an experimental learning structure on student motivation. Past research indicates that achievement motivation courses for students result in higher academic grades (Burris, 1956; Kolb, 1965) and more serious career planning (McClelland 1968). Among businessmen, achievement motivation courses have resulted in increased entrepreneurial activity (McClelland and Winter, 1969, in press). A second stream of research suggests that changes in the structure of the learning environment, without explicit training in achievement thought and action strategies, also may have a significant effect on students' achievement motivation. In a 10th grade typing class the structure was changed so that all students had increased personal responsibility for learning and there was a more cooperative relationship between teacher and students. At the end of the course the average typing speed was 66 net words per minute, 56% more than the average of a matched comparison class. Similar large gains in performance were obtained in a restructured 5th grade math class (Alschuler, 1968) in which (1) students were given more decision-making power for their own work, (2) the obstacles to success were located within the student, not in the teacher, (3) students were able to get immediate concrete feedback on their performance to assist them in goal setting. Again, these changes called for personal responsibility from students and a collaborative relationship between teacher and students. In one year the students' average gain on the Stanford Achievement Test of Mathematics was 2.85 years. This is compared to an average gain of .2 years for the same students during the 4th grade, and a gain of .6 years for acomparison 5th grade traditional math class taught by another teacher. The purpose of the present research is to explore and extend these findings (1) by studying a school in which all the courses are restructured as opposed to one class, (2) by studying the impact over a longer period, and (3) by obtaining a variety of yield measures, besides academic performance test scores, e.g., thought patterns, values, attitudes, and activities outside of school.

Alschuler (1968) has presented a taxonomy of games which can be used to evaluate the likely impact of different types of learning structures on achievement, affiliation and power motivation. All games have scoring systems, obstacles to be overcome, and methods of making decisions about moves, strategy, and tactics. Differences in scoring systems, locus of decision making, and obstacles determine the motivational character of the game, or in other words, the motivational demands of a learning structure.

At least three types of scoring systems may be distinguished. In a "C-Sum" scoring system, the total number of points remains constant. A point for one player automatically means the loss of a point for another player (i.e., a curved grading system). "0-Sum" scoring systems encourage competition, rivalry, and power concerns among students. Weakening the performance of other students is as effective a strategy as strengthening oneself. Under such a system, assisting other students may be detrimental to one's own score. In a "Non-0-Sum" scoring system each participant is free to earn as many points as he can and his score depends only on his performance relative to fixed standards (i.e., an absolute grading system). This system tends to encourage achievement concerns, since greatest value is placed on independent, self-reliant accomplishment, rather than on only doing better than other students. A "Shared-Sum" scoring system tends to encourage affiliation motivation since a point scored by one of the players is a point for all. "Shared-Sum" scoring systems, found frequently in team sports, are rarely used in the classroom.

The locus of decision making is another important aspect of a learning structure that cues in different motives. If the teacher has control over all the important decisions in the classroom such as the pace, content, quantity of work, and the criteria for grading, then students are forced to comply with or rebel against a pre-established format. This tends to encourage power concerns. However, if students make many of these decisions, then personal responsibility, self-reliance and independence are encouraged, i.e. achievement motivation. If decisions are made by a group or team, affiliation concerns become more salient and valuable.

A third aspect of structure influencing motivation is the nature of the obstacles to success. If the teacher makes most of the important educational decisions for students or fails to make his expectations explicit, then the teacher himself becomes the major obstacle to success and power concerns are stimulated. If the teacher is not in the role of major decision maker, a more collaborative coaching relationship between teacher and students can be developed, thus avoiding the role of the teacher as "the opposition." In this situation the major obstacle is the material to be mastered and the personal skills of the student necessary for mastery. Achievement, rather than power, is the most valued motive.

With this theoretical framework in mind we were interested in finding an educational setting where these types of structural changes had been introduced and where we could obtain a variety of yield measures to assess the motivational impact of the innovations.

The Duluth Individualized Instruction (II) Program

The basic aims of the II program are stated by Thorewald Esbensen, the principal organizer of the new system of instruction in Duluth.[1]

> We should emphasize that in our individualized programs we have been after something more than basic academic achievement -- important as this is. It is our contention that over the years, schools have not really done a very satisfactory job of preparing students to become life-long learners....
>
> We assert that schools traditionally spend so much time supervising students that the natural curiosity of a young learner gradually becomes a dependent sort of thing, often learning almost entirely on a steady stream of directions and exhortations from the teachers. Once this sad condition has been achieved, of course, a school can quite correctly claim that only a few of its students can be depended on to engage in independent inquiry.
>
> We have felt that an important measure of the success of our individualized programs would be the extent to which students in the programs developed the ability to undertake and complete a variety of independent learning activities.
>
> (Esbensen, 1966, pp. 24-25)

---

[1] Several long discussions with Mr. Esbensen during the summer of 1967 also supported our impression that the II constituted an achieving structure.

In March, 1968, the writer visited the Duluth School System interviewing teachers and observing classes on both the Individualized Instruction and traditional programs to identify more precisely what structural changes were made to implement these goals. Data was collected on those schools selected for our research: Washington Junior High School and the eight elementary schools within its boundaries.

This position underlies the structural changes in the II program and indicates one aim of the program to develop personal responsibility and initiative in students, characteristics which are intrinsic to achievement motivation.

Structure of the II and Traditional Programs: The most salient feature of the II program is the contract system. Each subject area is divided into a number of learning units or "contracts." Each contract specifies the material the student is expected to learn, the resource material he may use in preparing for the contract test and how the student will demonstrate mastery of the material. The following contract used in a 7th grade social studies class illustrates this format.

Number 44
Date
Social Studies

CRITERION PERFORMANCE

GIVEN FIFTEEN TRUE AND FALSE TEST ITEMS DEALING WITH RUSSIAN EDUCATION AND GOVERNMENT THE STUDENT WILL BE ABLE TO DISCRIMINATE BETWEEN THE TRUE AND FALSE ITEMS

SAMPLE TEST ITEM

___1. ALL CHILDREN OF THE USSR MAY GO TO COLLEGE

RESOURCES

___1. TEST 221-222

___2. FILMSTRIP 34

___3. FILMSTRIP D-5, D-2

___4. SINGLE CONCEPT FILM

___5. WORKSHEET 44

___6. READ WHAT IS COMMUNISM, pp. 54-60

___7. TEST 44

While the "criterion performance" describes the assigned area, the worksheet provided with each contract and the questions in the test give the student an operational definition of the material for which he will be held accountable. A section of the worksheet and related test items for Social Studies contract 44 (given above) is presented below.

Worksheet 44

The Soviet Union is made up of (20)__________ republics, the biggest of which is the (21)______ ________ ________ ________. These republics are members of the Communist Party; they meet once a year at the (22)___________ __________. The actual rule of the country is in the hands of a small group of men known as the (23)_____________.

Test 44

True or False

___2. There are 14 republics in the Soviet Union
___7. The ruling elite of the Soviet Union form the political body called the Presidium.
___14. The annual meeting of the Communist Party is called the Party Congress.

Essentially, the contracts provide the student with a complete, self-instructional learning unit. These learning units do not differ greatly from the traditional curriculum in the content covered, the kinds of exercises required, or the nature of the tests given. The major differences lie in freeing students from proceeding through classwork--exercises, discussions, movies, tests--as a group. Students are expected to work at their own pace by using the audio-visual aids, by doing the reading necessary to complete the contract exercises, and by passing the contract test. However, each student's progress and pace is continually monitored by the teacher. In March, the number of contracts completed by individual students in one class ranged from 7 to 70, indicating the great difference in pace among students and suggesting the diversity of material being worked on in one classroom at the same point in time.

1. Scoring System

There appear to be no systematic differences in the scoring systems used by II and traditional teachers. Most teachers in both programs included some aspects of an absolute scoring system (Non-0-Sum) and some aspects of a curved system (0-Sum). For example, some traditional teachers graded individual tests against fixed standards, but then curved the grades for the marking period, while others graded on the curve for some assignments, used fixed standards for others and then averaged all grades for the semester mark. Some teachers on the II indicated that they set different standards intuitively for students with different ability levels. To our knowledge, no teachers on either program used Shared Sum scoring systems.

While there are no systematic differences in scoring systems, there is a difference between II and traditional classes in the material counted towards a student's grade. In the II classes the number of contracts completed and the performance on contract tests provide the basis for a student's grade. In traditional classes, however, homework, written papers, workbooks and other non-test marks count toward a student's grade in addition to a student's test scores. In this sense, the traditional program is less test oriented than the II program. Traditional students who typically do poorly on tests can turn to other work to improve their grade while II students seldom have a comparable number of alternatives.

2. Locus of Decision Making

Ideally, the II as described by Esbensen entails a major change in the locus of decision making. While students are given more responsibility under the II than under the traditional program, the amount of change varies from class to class. Most decisions relating to the use of class time are made by students: students may choose to work alone or with other students; often they can decide the order in which they will proceed through the resources on a contract; and in some classes they can decide which of the resources they will use and which they will skip. In most classes students go through the contracts sequentially, with only occasional freedom to skip a contract or change the order. The most consistent change is that the student can regulate his own pace of work rather than moving through class work in lockstep with his classmates. Teachers do put pressure on students concerning their pace of work by prodding a student on if they feel he is working slowly or by trying to hold back a student who is rushing through work with little regard to quality, However, most teachers and students feel that the real decision on pace rests with the student.

While these student decisions depart from the traditional options, most of the major decisions concerning the content of the curriculum, the goals of the class, and the nature of the grading system remain the prerogative of teachers alone and closely resemble the traditional structure. Traditional teachers indicated that most decisions relating to the use of class time,course content, goals, grading, pacing, and so on, are made by them. When asked what decisions or choices are made by students, most indicated that occasionally students are able to select an outside project on their own, choose a paper topic from a list of suggested alternatives, decide what they would like to do during class time on a particular day; but it is clear that student decisions are limited to special occasions or to extra work and not built into the day-to-day working of the classroom.

This difference in "locus of decision making" is reflected in the degree of students' freedom in the classroom. In II classes students may move around freely to use the various learning aids in the room, including other students. In some classes students are explicitly encouraged to work together in going over resources and worksheets for the contracts. Collaboration is usually discouraged and often formally prohibited in traditional classes. Further, while the II teachers differ in the degree to which they allow horseplay and non-academic conversations to go on in class, all felt that students could not be expected to work intently for 55 minutes every class period. They expected and allowed some activity unrelated to class work. In traditional classes, while such activity is also expected, it is generally viewed as troublesome, because the teacher must maintain unified class learning. This same behavior is less of a problem in the II program.

3. Obstacles to Scoring

If a teacher makes almost all of the decisions in the classroom and does not make his expectations for students explicit, the teacher himself, according to our theoretical framework, becomes an obstacle to student success. Students are required to psych-out teacher demands, and emphasis is placed on student compliance rather than on student responsibility and initiative. In allowing students to make decisions on pacing and in making the demands of each learning unit explicit, the II program has decreased the importance of the teacher as an obstacle to student success.

In traditional classes, teachers retain most decision making power and the criteria for doing well are not stated as clearly as those offered through contracts on the II. Often, traditional teachers saw and resented their role as policemen. Several II teachers, moreover, simultaneously expressed their relief in being free of the policeman role. Student reactions to the non-disciplinarian role of II teachers varied. Some students were relieved, happy and content to work on their own at their own pace. Other students were distracted by the constant low-level noisy activity in class and resented the lack of class cohesion and learning in unison.

In the II classes teachers had more opportunities for developing close personal relationships and having longer conversations with individual students. These closer relationships were not desired by all II students and teachers, so they did not always occur. Many teachers in the traditional program saw the possibility of individual discussions as a distinct advantage of the II and commented on the problems of having to address remarks to the class as a whole. They felt that they did not know their students well personally. On the other hand some II teachers said they missed the class as an audience. Thus, for students and teachers in both programs, there were advantages and disadvantages in the teacher role defined by the learning structure.

4. Hypotheses

Although the stated aims of the II program are consistent with increasing achievement motivation, the structural features of the II program do not uniformly implement this aim. A mixture of 0-Sum and Non-0-Sum scoring systems are used in both traditional and II programs. II students had greater latitude in determining their own pace, but could demonstrate their mastery of the material only through tests. For both traditional and II students the teachers made the major decisions about course content, the grading system, etc. On the whole there does not appear to be a striking difference in the degree to which the structures of the two programs promote independent activity and achievement motivation

The major difference between the programs is the altered student-teacher relationship. Since the contracts direct student learning, teachers are freed to engage in more frequent individual coaching. The II structure provides fewer cues and creates less need in students to influence the teacher as an obstacle or condition to success, i.e. power motivation should decrease.

Although there are more opportunities in class for establishing and maintaining friendly relationships with teachers and other students, affiliation motivation is not clearly demanded by the learning structure; there is no Shared-Sum scoring system, team contracts do not exist and team decisions obviously are not required. While some students benefited from working with fellow students, others found this collaboration a distracting and noisy obstacle to their own progress in class. Thus, no unequivocal prediction can be made about the impact of the II structure on students' affiliation motivation.

The preceding discussion makes it clear that the II program aims have not been implemented completely or consistently at present. Therefore, this research cannot be viewed as a final test of the II program. Instead, it is an interim evaluation after the first two years of its existence. Hopefully, data on the motivational yields will be useful in modifying and improving the system in the future.

Sample

The sample for this study consists of an experimental group of 54 students who participated in an II program in the 6th and 7th grades and a matched control group of 54 students who were in a traditional program in both grades.* All students attended Washington Junior High School in the 6th grade. However, II students attended different elementary schools than those in the traditional program. Of the 10 elementary schools feeding into Washington Junior High School, two placed their entire 6th grade on the II program (Franklin and Nettleton), one had a hybrid II program, and the other schools operated under the traditional program. Since the II elementary schools were selected on the basis of servicing a low-income population, it was important for us to reduce this possible confounding effect. In the first stage of sampling, we selected traditional elementary feeder schools which were most comparable to the two experimental schools, using data on median income of families within each of the elementary school boundaries (see Table 5.1 below). Of the traditional elementary schools, Emerson, Jefferson, Munger, and Grant were selected to provide our control population. In addition to sharing medium income, these four schools are geographically closest to the two experimental schools. School personnel, with experience in the Washington District, also concurred with our choice of control schools as being most comparable to Franklin and Nettleton.

---

*Initially we tested 2800 students in two junior high schools and two senior high schools in Duluth. However, we were forced to reduce the sample to 108 students in Washington Junior High School, because no good comparison groups were available at the other three schools.

Table 5.1 Median income, and curriculum program for elementary schools feeding into Washington Junior High School.[1]

Elementary School	Median Income[2]	Curriculum
Nettleton	4,057	II
Franklin	4,202	II
Emerson	4,434	Trad
Munger	4,446	Trad
Jefferson	4,620	Trad
Grant	5,543	Trad
Lowell	5,879	Trad
Birchwood	5,930	Trad
Kenwood	6,101	Trad
Park Point	6,293	Trad

[1] Information was provided by Harris Miller of the Rand Council, University of Minnesota in Duluth.

[2] Median income was compiled from 1960 Census data, selecting those census tracks which most closely fit school boundaries for each school. This provides only a rough measure of median income for each school since individuals with no children in the schools are included in the measure.

In the second stage of the sampling, background data was collected on all 7th grade students at Washington Junior High School who had attended one of the six elementary schools chosen. From past research, it was clear that we needed to match students on sex, IQ, scholastic achievement, and age. While we also wished to match on social class, there was no reliable information available at the time of matching. Data was collected on father's occupation at a later date to check on the comparability of the sample on this factor.

Before proceeding with matching, subjects were excluded from the sample who 1) transferred into the 6th grade more than two months after the school year began, 2) transferred into the opposite instructional program in the 7th grade or 3) lacked test information on the IQ test, the Iowa Test of Basic Skills or the Thematic Apperception Test. Each of the 55 remaining students in the experimental group (II) was then individually matched with one of the 85 subjects in the control population (Trad.) on the following:

1. Sex: All subjects were matched
2. IQ: Composite scores on the 4th grade Lorge Thorndike Test of Intelligence were used. This test, given in March 1965, was the latest IQ test given before entry into the experimental program. All matches were within 6 points.
3. Achievement: Composite scores on the 5th grade Iowa Test of Basic Skills were used. This test, given in March 1966, was the latest achievement test given before entry into the experimental program. Matches were within 7 points with 6 exceptions: three of 7 points and one each of 8, 11 and 12 points.
4. Age: Matched subjects were within one year with one exception of 16 months.

Insert Table 5.2 here

Table 5.2 Mean IQ, ITBS, and Age for II and Traditional Samples (Male, Female, and Total)

		II	Trad	D	t[1]	p[2]
4th Grade I.Q.	Total (N=54)[3]	100.09	100.13	.037	.106	N.S.
	Male (N=28)	97.54	97.21	.321	.659	N.S.
	Female (N=26)	102.85	103.27	.423	.841	N.S.
5th Grade ITBS[4]	Total (N=54)	5.55	5.68	.122	2.392	.020
	Male (N=28)	5.35	5.54	.186	2.382	.025
	Female (N=26)	5.77	5.82	.054	.844	N.S.
Age (in Months)[5]	Total (N=54)	151.50	151.74	.241	.262	N.S.
	Male (N=28)	152.93	152.86	.071	.052	N.S.
	Female (N=26)	149.96	150.54	.577	.468	N.S.

[1] t values are based on the formula for the difference between correlated means

[2] p values are two tailed

[3] N = number of matched pairs

[4] ITBS scores are presented in the form of grade equivalents. A score of 5.4 is interpreted as an achievement level expected of a student in the 4th month of the 5th grade (based on a 10 month school year).

[5] Age as of September, 1967 (fall of 7th grade)

These statistics indicate a very close match on I.Q. and age for the male, female, and combined samples. The differences on the ITBS, while small, are statistically significant for both the male and combined samples. This initial difference in achievement level will limit our analysis to differences in achievement gain between the experimental and control groups rather than differences in absolute achievement level as measured by the ITBS.

In March, 1968, data was collected on father's occupation to check the comparability of our matched pairs on social class. Table 5.3 presents the distribution of occupations in the experimental and control groups. In comparing the occupational levels for the 39 pairs on which complete information was available, the sign test revealed no significant differences for males, females, or the combined sample.

Table 5.3 Occupational Distribution of Fathers of II and Traditional Students[1]

Occupational Level	II Program	Traditional Program
1) Professional & high Administrative	2%	0%
2) Managers, executives, & officials	2%	8%
3) Inspectional, supervisory, & high-grade non-manual	10%	6%
4) Clerical, sales, & lower-grade non-manual	17%	23%
5) Skilled Craftsmen, foreman	31%	27%
6) Semi-skilled operatives	24%	21%
7) Unskilled	10%	8%
8) Unemployed	5%	6%
TOTAL %	101	99
Total for whom occupational information was available	42%	48%
Retired (no further information)	3%	0%
Deceased (no further information)	9%	3%
Occupation Unscorable	0%	3%

[1] Occupations were classified according to a modification of the Hall-Jones Scale, British Journal of Sociology, 1950, No.1, pp. 35-55.

In summary, the sample provides a well-matched group of students on the II and traditional programs. While there were small and significant differences on the ITBS (equalling 2 months difference for males, and one month for the entire sample), the II and traditional samples are almost identical on age, I.Q., and social class. To get this match, it was necessary to restrict ourselves to Washington Junior High School. Further, it should be noted that our sample is comprised predominantly of students from low-income homes, and therefore is not representative of all students participating in the II and traditional programs. The impact of these programs for other income groups may be different, and cannot be determined from our results.

MEASURES

The testing was conducted in September, 1967 after students had been on the experimental program for one year, and again in March, 1968 after a year and six months on the program. Data was collected to measure the impact of the II program on three types of motivational yields--thought patterns, attitudes, and action.

1. Thought

The Thematic Apperception Test (TAT) was used to obtain a sample of students' thought patterns. This test was selected since it is the standard method for eliciting fantasy that can be scored for the spontaneous frequency of achievement, affiliation and power concerns (McClelland, et al., 1953). The fall TAT consisted of six printed pictures in booklet form; young boy at desk, staring into space; boy and girl in cap and gown facing each other in a doorway; man at a drafting table looking at a family photograph; man talking to a young boy sitting on a farm fence;

man and woman on the high trapeze; and, a boy in the foreground with vague operation scene in background.

In the spring, a different set of six pictures was used and presented to students as slides rather than in printed form. The six pictures were: girl with books in arm standing in front of a farm plowing scene; group of 7 young men talking around a large table; older man and young boy looking at paper on desk; two men in an old workshop setting; and a line drawing of a girl in foreground and nurse at patient's bedside in background.[1] The changes in format and content were made in an attempt to counteract the usual reduction in TAT raw scores in short-term re-test situations. These revisions, however, limit our analysis of change to an investigation of the difference in the relative position of experimental and control students in the fall and spring, and do not allow analysis of individual absolute change scores, i.e., standard scores are used to measure change.

Both sets of TAT's were scored for achievement motivation (n-Ach), affiliation motivation (n-Aff), and power motivation (n-Pow) according to the scoring systems given in Atkinson's et al., Motives in Fantasy, Action and Society (1958). The fall TAT's were scored for n-Ach by the writer. Before scoring, the writer obtained a reliability of .80 as measured against the expert scoring on the first 30 stories in Atkinson. The detailed recommendations on scoring procedure were followed. All other motive scoring was done professionally by the Motivation Research Group.[2] A different coder was used for each of the three motives, but each coder scored both fall and spring tests (with the exception of n-Ach). Coders at Motivation Research Group are checked every four months for scoring reliability, and obtaining rho's in the high 80's.

---

[1] Copies of the TAT pictures used may be obtained at cost from AMDP, Peabody House, 13 Kirkland Street, Cambridge, Mass.

[2] The Motivation Research Group is a division of the Behavioral Science Center of Sterling Institute, Prudential Building, Boston, Mass.

2. Attitudes

The second type of yield data consists of seven measures selected to tap attitudes related theoretically to achievement motivation and empirically to academic performance. Data on each of the measures were collected in fall and spring of the 7th grade by asking students to agree or disagree with a series of statements about themselves (see Appendix I for a copy of the test and scoring systems used).

Value of Achievement (v-Ach). This scale measures an individual's perception of the value he places on achievement through his responses to nine statements such as: "I feel that my future peace and self respect depend upon my accomplishing some notable piece of work." and, "I enjoy relaxation wholeheartedly only when it follows the successful completion of a substantial piece of work." This scale, a modification of Murray's v-Ach scale, is reported in de Charms, et. al. (1955). Although v-Ach and n-Ach are theoretically related, typically they do not correlate highly with each other. They reflect different aspects of achievement concerns.

Debilitating (Test) Anxiety (DA). This ten-item scale created by Alpert and Haber (1960) measures an individual's perception of the extent to which anxiety interferes with his performance in achievement test situations. Students are asked to agree or disagree with statements such as the following: "The more important the examination, the less well I seem to do," or, "In a course where I have been doing poorly, my fear of a bad grade cuts down my efficiency." Our interest in this scale follows its use by Atkinson and Feather (1966), as a measure of the individual's tendency to avoid failure. Atkinson and Feather sum this negative tendency with n-Ach, (the positive tendency to approach success) to obtain the resultant tendency toward achievement-oriented actions. From this theoretical perspective a decrease in DA is as important as an increase in n-Ach.

Internal vs. External Control of Reinforcement (IE). This scale measures an individual's perception of the relationship between his own behavior and success or failure. An internal orientation characterizes a person who believes his own actions determine whether or not he will succeed. An external orientation, however, refers to the expectation that one's successes or failures occur as a result of external causes, i.e., chance, fate, luck. The IE scale consists of 12 statements, such as "Success almost always turns out to be the result of perserverence and ability," and "Making friends is largely a matter of being lucky enough to meet the right people." Our use of this measure developed by Rotter (1962) stems from its theoretical relevance, its high empirical correlation with DA (Lefcourt, 1966) and its correspondance to the Coleman items (see below) which explain much of the variance in academic performance among lower class subjects (Coleman, 1966)

Control of Environment (COE). The Control of Environment Scale, used in the Coleman Report (1966), is identical conceptually with the Internal vs. External Scale described above. An individual high on this scale believes he can affect his environment through his own behavior, while an individual low on the scale feels that what happens to him is determined by fate, chance or luck.

The three items that make up this scale are as follows: "Every time I try to get ahead, something or someone stops me," "People like me don't have much of a chance to be successful in life," and, "Good luck is more important than hard work for success." This measure was included in addition to IE, so that we could relate our findings specifically to those of the Coleman Study.

Origin-Pawn (OP). This scale, developed by Alschuler, is related to the COE and IE scales. In contrast to perceptions of what controls reinforcement (IE), this scale reflects students' perceptions of what stimulates them to action, and includes several items specifically related to school activities. The scale items get at whether students see themselves as originating their activities (Origins) as in acting in response to demands, assignments and requests (Pawns), e.g., "I'd rather watch TV than try to think of something new to do," "I always volunteer answers in class without being called on." At the present time there is no empirical evidence for the validity of this scale.

Self-Esteem (SE). The Coleman Report reported that for children from advantaged homes, self-esteem correlated most strongly with the variance in academic performance. Coleman's measure of self-esteem related largely to academic situations. While the items on the Janis Scale (Janis, 1954), used here refer to one's self-esteem in more social situations, it may produce similar results. Also, the scale is relevant to the affiliation yields of the experimental curriculum. An illustrative item is "I seldom have fears that my actions will cause my friends to have a low opinion of me."

Subjective Goal Discrepance: Inclusion of this measure created by Mahone (1966) stems from research which shows that individuals with high achievement motivation tend to set moderate-risk goals. Those individuals with low achievement motivation tend to take either very high or very low risks. The Subjective Goal Discrepancy Index provides an attitudinal measure of risk-taking behavior. It measures the difference between an individual's estimate of his own ability and his estimate of the ability required by his occupational choice. For example, suppose a student estimated that 75% of his classmates were below him in ability, and feels that students in the top half of his class have enough general ability to be a newspaper reporter, his stated vocational goal. His discrepancy score would be -25. The median of the distribution of discrepancy scores (regardless of sign) was used to divide the students into two groups for our analysis; high and low discrepant. Achievement-oriented risk-taking ability should be reflected in low discrepant choices.

3. Action

Our third area of interest was the motivational impact of individualized instruction on the actions of students. Increases in thought patterns and attitudes may be reflected in activity both in school and outside of school. In addition to school attendance and achievement records, we collected data on game playing and use of leisure time to investigate whether any motivational yields had generalized to activity outside the classroom.

Attendance: The number of absences during the first 2/3 of the 7th grade (through March, 1968) were recorded for each student. This measure is admittedly crude since it includes both excused and unexcused absences; however, it is reasonable to expect that absences due to illness would balance out for experimental and control groups. II teachers felt that the program would make school a more enjoyable place for students, and consequently, that attendance would be improved for II students.

Achievement: Composite scores on the Iowa Test of Basic Skills (given each year in March) were gathered for 5th, 6th, and 7th grades. The composite score is an average of test scores on vocabulary, reading, language skills, work-study skills, and arithmetic. Scores were recorded in grade equivalent form; so that a score of 5.4 indicates an achievement level expected of a student in the fourth month of the 5th grade (based on a 10 month school year).

Risk-taking behavior: An addition game was used to allow us to study students' risk-taking behavior. Like the measure of Subjective Goal Discrepancy, inclusion of this game is based on past research which indicates that individuals with high n-Ach tend to set moderate-risk goals, while those with low n-Ach tend to set either very high or very low-risk goals. Since students in the experimental program were involved in setting their pace of work on contracts, we were especially interested in whether this experience had generalized effects on risk-taking behavior.

The addition game consisted of three rounds of addition problems with 12 problems (ranging from one to twelve columns of figures) in each round. Students were asked to estimate the problem they could complete within 30 seconds, and after making this bid were given 30 seconds for the problem. On each succeeding round, subjects had the opportunity to evaluate their prior performance and to set a new bid for the present round. The scoring system elaborates possible moves consistent with a moderate-risk strategy. Deviations from this strategy are scored as errors of the three following types: a "chicken" error if the subject set an overconservative goal (e.g., staying at the same level problem for three rounds with successes on each round); a "dare" error if the subject set an overambitious goal (e.g., jumping from n to n+4 in one round), and a "wrong direction" error if the subject set a goal in the direction opposite to what the result of the previous trial seemed to indicate (e.g., dropping to n-1 after a success at n). No errors indicate moderate risk-taking behavior. (See the Appendix for a copy of the test and a detailed scoring system.)

Activities Survey*: This questionnaire, given only in the spring of 7th grade, was included to measure students' voluntary participation in activities outside of school. By looking at leisure time activities, we believed we could obtain a good indication of the kinds of personal choices students made without the demands or expectations of others. The six sections of the questionnaire, developed by Rodewald (1968) are described below. (See Appendix I for a copy of the survey--boys and girls form--and a copy of the scoring system.)

Hobbies Checklist: Students were asked to go through a checklist of 28 hobbies (30 for girls) and indicate how many times in the past two weeks they participated in the activity. In addition, students were asked to indicate those hobbies which they usually did alone. Hobbies are closely related to achievement motivation since they require initiative and involve an active pursuit of personal satisfaction through developing a skill or craft or working on creative expression.

---

* In general, the Activities Survey obtains information not obtainable by any other measure described in the 6th Mental Measurements Year Book. Other surveys reflect attitudes, neurotic activities, rare accomplishments or highly stable behavior, e.g., number of years attending church. The Activities Survey does not have extensive empirical evidence to support its validity. However, because of the need for this type of inventory and the need for further scale development and validation it is presented and described in full in the appendix.

Implicit in such activity is competition with oneself or with a standard of excellence. We would expect those students with greater involvement in achievement-oriented activities to check more hobbies listed or show more frequent involvement in those activities checked than those students with less achievement action orientation.

Group Activities Checklist: This section contained a list of activities intended to represent affiliation-oriented actions; those focusing on interaction with others. Again, students were asked to indicate how many times in the past two weeks they had participated in any of the activities. We expected that those individuals who have greater participation in affiliative-oriented activities will check more of the activities listed or indicate more involvement in those activities checked than individuals with less participation in affiliative activities.

Work: Data was collected on work experience of students in both programs. While students may have been primarily motivated to get jobs for economic reasons, nevertheless actually acquiring and maintaining a job does require initiative and personal responsibility, expecially for a 7th grade student. These characteristics are part of the conceptual elaboration of achievement motivation, and we therefore expected that students oriented towards achievement activity would be more apt to have a job, and more apt to show initiative in getting a job. As a measure of initiative in getting a job, students were asked how they found out about the job and how they finally got the job. Scores from these two questions were combined for a total measure of initiative.

Saturday Scorecard: In this section students were asked to fill in an hourly record (covering 24 hours) stating where they were, what they were doing, and with whom they were doing it. Saturday was selected because it is usually the day that teenagers have most choice concerning their activities.

The typology used in coding the Saturday Scorecard was constructed from information on the type of activity participated in and the individuals involved in the activity. Four types of activities were distinguished: 1) Purposeful activities such as working on hobbies, doing homework, etc., 2) Pastime activities oriented toward relaxation, entertainment, or affiliative goals (going to movies, "goofing around" with friends, etc.), 3) Neutral activities such as eating, doing required chores, etc. and 4) Unknown or unscorable activities which included those which were insufficiently described to be placed into one of the first three categories.

To investigate participation in achievement-oriented activities, we will look first at the proportion of hours spent in purposeful activities. Two measures will be used to indicate involvement in affiliative activity; the proportion of hours spent in pastime activity with others, and the proportion of time spent in both purposeful and pastime activity with others.

RESULTS

The results will be described in three sections representing the types of motivational yield: thought, attitudes, and action. Within each section, the effects of the II program are presented separately for males and females since research on achievement motivation consistently shows sex differences. Similarly, the motivational impact of the II program may differ for males and females.

The following two tables summarize the results of the II program in all three yield areas for males (Table 5.4) and for females (Table 5.5). Data in the tables are presented in three columns, for the fall (September, 1967),

Table 5

Mean Scores and t-test Results on Motivational Yeilds for II

Measures	Fall		
	II Mean	Trad. Mean	N
I. Thought			
A. Achievement Motivation	2.321	2.179	28
B. Power Motivation	1.393	2.143	2
C. Affiliation Motivation	3.571	3.679	28
II. Attitudes			
A. Value of Achievement	3.160	2.148	24
B. Internal vs. External Locus of Reinforcement (positive scores indicate internal locus)	1.160	1.259	2
C. Debilitating Test Anxiety	1.840	2.185	2
D. Origin - Pawn (positive scores indicate origin orientation)	.080	.259	24
E. Self - Esteem	.360	.407	24
F. Control of Environment (positive scores indicate lack of control of environment)	-1.360	- .926	2
G. Perceived Ability [3]	56.900	46.240	18
H. Perceived Ability required by Vocational Choice [3]	32.083	40.217	19
I. Subjective Goal Discrepancy (figures in mean cells represent % with low subjective goal discrepancy) [3]	(N=19) 42.1%	(N=22) 27.3%	4
III. Action			
A. 5th and 6th Grade Iowa Test of Basic Skills	5th 5.354	5.539	2
B. 6th and 7th Grade Iowa Test of Basic Skills	6th 5.657	6.196	2
C. 5th and 7th Grade Iowa Test of Basic Skills	5th 5.354	5.539	2
D. Days absent from Sept., 1967 to March, 1968 [4]			
E. Addition Game - Initial Risk Errors [3]	.259	.286	2
F. Addition Game - Use of Feedback Errors [3]	.407	.607	2
G. Addition Game - Total Errors (Risk and Feedback) [3]	.667	.893	2
H. Activities Survey - Saturday Scorecard			
1. Proportion of hours in Purposeful Activity [4]			
2. Proportion of hours in Purposeful Activity - Alone [4]			
3. Proportion of hours with Others [4]			
4. Proportion of hours in Pastime Activity - with Others [4]			

[1] N = number of matched pairs used for t-test. Mean scores were

[2] p's are two tailed except where noted 1.t.

[3] Change scores not calculated due to statistical problems in matc

[4] Data collected only in Spring.

[5] N = number of co

* p ≤ .05 ** p ≤ .01

able 5.4

for I.I and Traditional Males (Fall, Spring, and Fall-Spring Change).

Fall				Spring					Fall to Spring Change				
Trad. Mean	N[1]	t	p[2]	I.I Mean	Trad Mean	N	t	p	I.I Mean	Trad Mean	N	t	p
2.179	28	.099	1.000	.678	1.821	28	1.122	.272	- .575	- .286	28	1.033	.311
2.143	28	1.079	1t .145	1.643	1.893	28	.317	1t .376	.128	- .063	28	.681	1t .502
3.679	28	.153	1.000	1.643	1.786	28	.215	1.000	- .207	- .203	28	.016	1.000
2.148	24	1.255	.222	2.000	2.038	25	.222	1.000	- .833	- .080	23	.487	.631
1.259	24	.429	.672	1.889	2.154	25	.374	.711	.667	.400	23	.223	1.000
2.185	24	.254	1.000	2.821	- .808	26	3.203	** .004	1.680	-2.760	24	2.454	* .022
.259	24	.273	.787	2.214	.846	26	1.330	.180	2.160	.560	24	1.322	.199
.407	24	.118	1.000	- .464	1.038	26	2.354	* .027	- .640	.560	24	1.436	.165
.926	24	.841	.409	-1.714	-1.417	24	.778	.445	- .440	- .609	22	.137	1.000
46.240	18	1.373	.188	53.000	52.217	23	.367	.717					
10.217	19	.914	.373	33.000	35.476	20	.866	.397					
(N=22) 27.3%	41[5]	χ^2=.997	.33	(N=25) 24.0%	(N=18) 38.9%	43[5]	χ^2=1.10	.294					
5.539	28			6th 5.657	6.196	28			change .304	.657	28	2.570	* .016
6.196	28			7th 6.550	6.875	28			change .893	.679	28	1.401	.172
5.539	28			7th 6.550	6.875	28			change 1.196	1.336	28	.994	.329
				9.143	6.500	28	1.478	.151					
.286	27	.296	.769	.071	.179	28	1.362	.184					
.607	27	1.154	.259	.679	.556	27	.143	1.000					
.893	27	.923	.364	.750	.741	27	.391	.699					
				4.318	5.846	21	.809	.428					
				1.179	.643	21	.996	.331					
						21	2.610	* .017					
				2.143	2.893	21	1.113	.279					

s were calculated using all available data.

n making comparison.

of cases for χ^2.

Table 5.5

Mean Scores and t-test Results on Motivational Yeilds for II

Measures	Fall II Mean	 Trad Mean	 N[1]
I. Thought			
A. Achievement Motivation	-.269	1.346	26
B. Power Motivation	1.538	2.846	26
C. Affiliation Motivation	5.269	4.308	26
II. Attitudes			
A. Value of Achievement	2.087	5.640	23
B. Internal vs. External Locus of Reinforcement (positive scores indicate internal locus)	1.583	2.280	24
C. Debilitating Test Anxiety	0.000	2.000	24
D. Origin - Pawn (positive scores indicate origin orientation)	1.833	2.840	24
E. Self - Esteem	.729	.640	24
F. Control of Environment (positive scores indicate lack of control of environment)	-1.087	-1.720	23
G. Perceived Ability[3.]	49.174	62.808	23
H. Perceived Ability required by Vocational Choice[3.]	45.208	41.250	22
I. Subjective Goal Discrepancy (figures in mean cells represent % with low subjective goal discrepancy)[3.]	(N=22) 59.1%	(N=24) 58.3%	46
III. Action			
A. 5th and 6th Grade Iowa Test of Basic Skills	5th 5.769	5.823	20
B. 6th and 7th Grade Iowa Test of Basic Skills	6th 6.181	6.735	2
C. 5th and 7th Grade Iowa Test of Basic Skills	5th 5.769	5.823	20
D. Days Absent from Sept., 1967 to March, 1968[4.]			
E. Addition Game - Initial Risk Errors[3.]	.154	.231	2
F. Addition Game - Use of Feedback Errors[3.]	.423	.346	2
G. Addition Game - Total Errors (Risk and Feedback)[3.]	.577	.577	2
H. Activities Survey - Saturday Scorecard			
1. Proportion of hours in Purposeful Activity[4.]			
2. Proportion of hours in Purposeful Activity - Alone[4.]			
3. Proportion of hours with Others[4.]			
4. Proportion of hours in Pastime Activity - with Others[4.]			

1. N = number of matched pairs used for t-test. Mean score
2. p's are two-tailed except where noted 1t.
3. Change scores not calculated due to statistical problems
4. Data collected only in spring. 5. N = number of ca

* $p \leq .05$ *** $p \leq .001$

able 5.5

for II and Traditional Females (Fall, Spring, and Fall-Spring Change)

Fall				Spring					Fall to Spring Change				
Trad Mean	N[1]	t	p[2]	II Mean	Trad Mean	N	t	p	II Mean	Trad Mean	N	t	p
1.346	26	1.526	.140	2.077	5.115	26	2.381	.025*	.254	.673	26	1.240	.226
2.846	26	1.552	.067 it	1.615	2.423	26	1.130	.135 it	.062	-.132	26	.535	.597 it
4.308	26	1.167	.254	4.654	4.538	26	.104	1.000	.075	.367	26	.704	.488
5.640	23	.7891	.438	2.520	1.480	24	1.120	.274	.304	-2.208	22	2.155	.043*
2.280	24	.511	.614	2.800	2.731	25	.127	1.000	1.333	.400	24	.923	.365
2.000	24	1.707	.101	1.360	2.731	25	.815	.423	1.000	.520	24	.444	.661
2.840	24	1.045	.307	2.880	2.731	25	.097	1.000	1.125	-.040	24	1.295	.208
.640	24	.458	.651	-.320	-.160	24	.474	.640	-1.042	-.583	23	.647	.524
1.720	23	1.679	.107	-1.240	-2.000	25	1.890	.071	-.174	-.240	23	0.000	1.000
62.808	23	2.320	.030*	50.731	59.192	26	1.211	.237					
41.250	22	.444	.662	47.308	41.731	26	.660	.515					
(N=24) 58.3%	46[5]	χ^2=.003	.95	(N=26) 69.2%	(N=26) 57.7%	52[5]	χ^2=.746	.40					
5.823	26			6th 6.181	6.735	26			change .412	.912	26	3.644	.001***
6.735	26			7th 7.188	7.404	26			change 1.008	.669	26	2.243	.034*
5.823	26			7th 7.188	7.404	26			change 1.419	1.581	26	1.368	.183
				6.269	7.115	26	.611	.547					
.231	26	.625	.538	.115	.038	26	1.000	.327					
.346	26	.464	.646	.360	.038	25	2.317	.029*					
.577	26	.000	1.000	.480	.077	25	2.449	.022*					
				3.917	3.885	24	.637	.530					
				1.346	2.038	24	1.618	.119					
						24	2.126	.044*					
				5.846	5.692	24	1.200	.242					

scores were calculated using all available data.

roblems in making comparison.

of cases for χ^2.

for the Spring (March, 1968), and for the change between fall and Spring. Data on three of the action measures are not presented in the summary tables because they were not amenable to this tabular format. These results are presented in the action section (See pp. 32-36).

1. Thought

After one year on the II program there were no significant differences between II and traditional males in n-Ach and n-Aff. There is a trend (not statistically significant) showing II males lower in power concerns than traditional males. In the spring of the second year again there were no significant differences between II and traditional males on any of the three motives. The earlier trend in n-Pow data did not reappear. The differences in motive change between II and traditional males were not significant.

For the females, there were no significant differences between II and traditional students in the three motives after one year on the program, although II females tended to be lower in both n-Ach and n-Power. By the spring of the second year, the difference in n-Ach reached statistical significance ($t = 2.381$, $p < .025$, two tailed). The trend in n-Power remained but continued to be non-significant. In the spring there was no difference in n-Aff and there were no significant differences in mean change on any of the three motives.

When the males and females in the two samples are combined, the difference in n-Pow is significant in the fall of seventh grade ($t = 1.890$, $p < .04$) and approaches signifance in the spring of seventh grade ($t = .977$, $p < .17$). At both times the II students are lower in n-Pow than the traditional students as predicted.

Table 5.6

Analysis of Variance on n-Ach Change from Fall to Spring[1]

Source	df	MS	F
IQ	2	1.19	
Sex	1	24.43	18.7**
Program	1	3.98	
IQ x Sex	2	1.97	
IQ x Program	2	0.05	27.0*
Sex x Program	1	0.23	
IQ x Sex x Program	2	2.66	

1. Overall F = 2.82, significant at the .01 level. Ten cases were dropped to equalize IQ groupings for males and females. Resulting N = 100.

* $p \leq .05$

** $p \leq .01$

Table 5.7

Mean Change in n-Ach from Fall to Spring by IQ and Program (based on cell means from the Analysis of Variance)

	IQ		
Program	Low	Med	High
II	-.17	-.06	-.37
Traditional	.29	.36	-.06
Difference in Mean Change	-.46	-.42	-.31

An analysis of variance was performed on change in each of the three motives between fall and spring using I.Q., sex, and school program as the variables. There were no significant results on change in n-Pow or n-Aff, however the F for n-Ach (2.82) was significant at the .01 level. There was a significant first order effect with females showing significantly greater increase in n-Ach than males. Also the interaction between program and I.Q. was significant at the .05 level. The difference in the amount of change in n-Ach between the II and traditional students was most pronounced for the low I.Q. students and least pronounced for the high I.Q. students.

2. Attitudes

In the beginning of seventh grade there were no significant differences in any of the seven measured attitudes of males. In the spring, however, II males showed significantly higher debilitating test anxiety ($t = 3.203$, $p = .004$, two tailed) and significantly lower self-esteem ($t = 2.354$, $p = .027$, two tailed). The comparison of change in attitudes between fall and spring showed a significant difference on debilitating test anxiety ($t = 2.454$, $p = .022$, two tailed) with II males increasing and traditional males decreasing on this measure. Self-esteem decreased in II males while it increased in traditional males, and the difference in change approached significance ($p = .165$).

For the females, the results from the fall tests (7th grade) also show no significant differences on six of the seven attitudinal measures. II females had significantly lower perceptions of their ability than traditional students ($t = 2.320$, $p = .030$, two tailed). However, this difference disappeared in the spring. None of the other attitude measures showed a significant difference in the spring of the seventh grade. While females were not significantly different from II females in Value of Achievement at either the fall or spring testing, comparison of change scores in v-Ach between fall and spring yielded a significant difference (t = 2.155, p = .043, two tailed). This seeming inconsistency is attributed to the finding that a reversal occurred in the relative positions of II and traditional females on v-Ach, with traditional females decreasing and II females increasing slightly over their previous scores. No other change score comparisons approached significance.

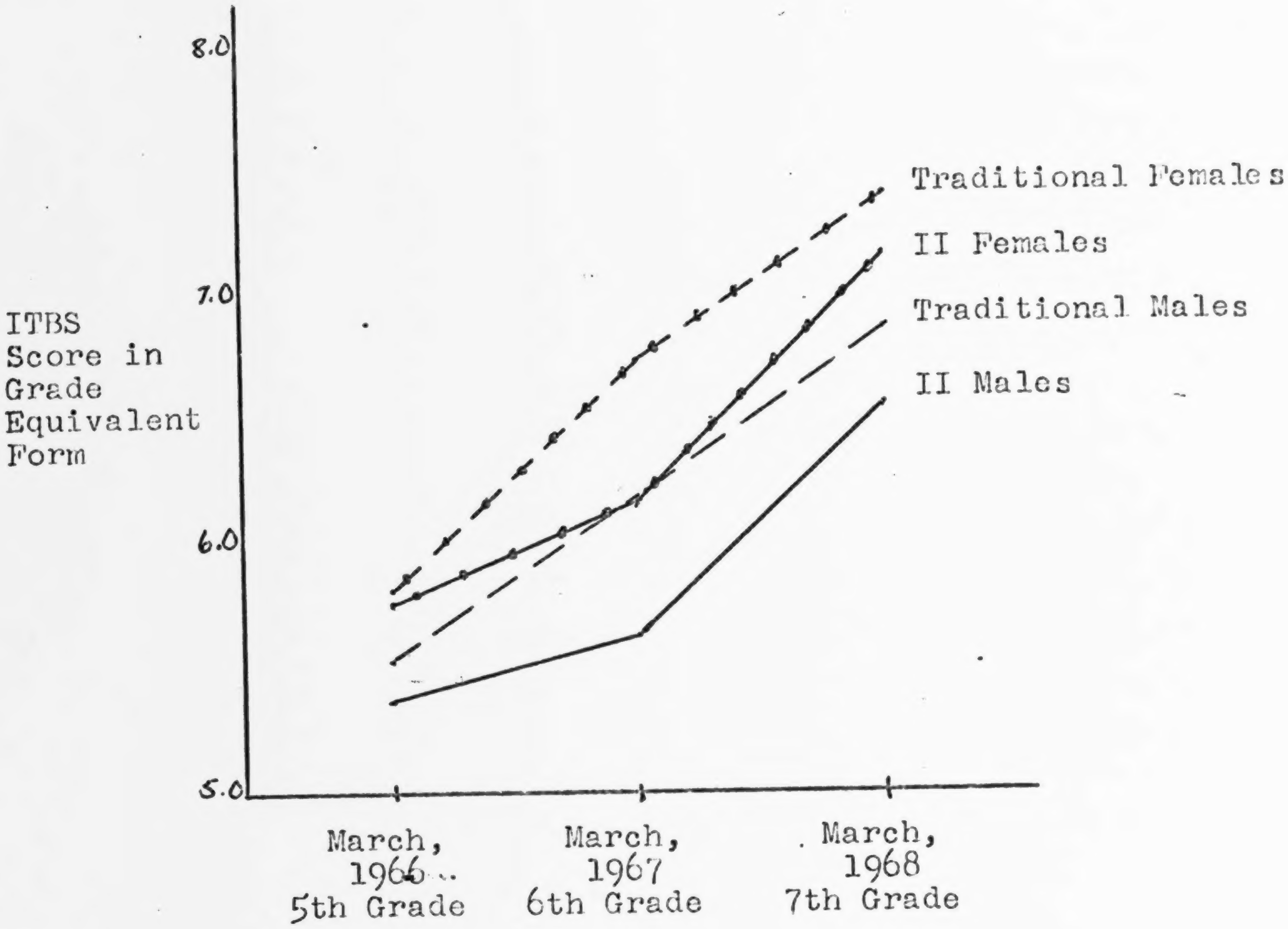
3. Action

In the fall of 7th grade, there were no significant differences for either males or females between II and traditional students on the math game (used to measure risk-taking and use of feedback). In the spring, however, II females made significantly more feedback errors than traditional females (t = 2.317, p = .029, two tailed).

Graph 5.1 below presents the results on the ITBS over the two year period of the experimental program. As can be seen, there are initial differences in the 5th grade (pre-II) ITBS scores with the traditional students higher than II students (t = 2.392, p = .020, two tailed). Because this initial difference is statistically significant we will limit our analysis to a study of change scores. In the first year of the II program, traditional students made significantly greater gains in achievement than their II counterparts. For both males and females the gain of traditional students was more than twice that of II students. In the second year of the program, however, II students (males and females combined) recovered most of the ground lost, making significantly greater gains on the ITBS than traditional students (t = 2.565, p = .013, two tailed).

Graph 5.1

Mean Scores on the Iowa Test of Basic Skills (ITBS) in 5th, 6th and 7th Grades for II and Traditional Groups (Male and Female)



When looking at the total amount of change over the two year period, there were no significant differences between II and traditional students for either the male or female sample. This indicates that the II program did not result in a permanent set-back for its students, nor in a greater overall achievement gain than the traditional students.

Data on action measures outside the school setting were collected only in the spring of 7th grade. Information from the Saturday Scorecard indicates that II males spend a significantly lower proportion of free time with others than traditional males ($t = 2.610$, $p = .017$, two tailed). II females, however, spend a significantly greater proportion of time with others than traditional females ($t = 2.126$, $p = .044$, two tailed). Table 5.8 presents the data on participation in group activities and hobbies. No significant differences were apparent for males or females between II and traditional students either in the total number of group activities or in the frequency of involvement. For the combined sample, however, the difference between II and traditional students in the total number of group activities reached statistical significance ($t = 2.05$, $p = .040$, two tailed) with II students engaged in fewer such activities.

Looking at student involvement in hobbies, there are no significant differences between II and traditional students (male or female) on the total number of hobbies in which they participate. However, data on the frequency of involvement indicates that traditional males have more hobbies that they do with moderate frequency than II males ($p = .012$, two tailed), while II males have more hobbies that they do with high frequency than traditional males ($p = .036$, two tailed). A significantly greater number of traditional students than II students (males and females combined) had at least one job during the period from June 1967 to March 1968.

Table 5.8

Comparison of II and Traditional Students on Participation in Group Activities and Hobbies (From Activities Survey Checklists, Spring, 1968)

	Males					Females					Total				
	Number of pairs in which					Number of Pairs in which					Number of Pairs in which				
	II >T[1]	II =T	T > II	p.[2]	N[3]	II >T	II =T	T > II	p	N	II >T	II =T	T > II	p	N
1) Group Activities															
a) total number of Group Activities done in two weeks	7	4	13	.264	24	6	5	14	.116	25	13	9	27	.040*	49
b) Number of Group Activities done 3-7 times in two weeks	6	4	13	.168	23	11	2	10	1.000	23	17	6	23	.267	46
c) Number of Group Activities done 8+ times in two weeks	8	3	12	.504	23	8	5	10	.814	23	16	8	22	.418	46
2) Hobbies															
a) Total number of Hobbies done in two weeks	9	3	12	.664	24	7	3	13	.264	23	16	6	25	.211	47
b) Number of Hobbies done 3-7 times in two weeks	4	3	16	.012*	23	6	7	8	.790	21	10	10	24	.026*	44
c) Number of Hobbies done 8+ times in two weeks	12	8	3	.036*	23	7	7	7	1.000	21	19	15	10	.137	44
d) Number of Hobbies done alone	8	3	7	1.000	18	7	3	12	.360	22	15	6	19	.602	40

1. II > T means II student is higher than matched traditional student.
2. p values based on the sign test.
3. N = number of matched pairs.

* $p \leq .05$

Table 5.9

Number and Percent of II and Traditional Students Who Had at least One Job from Summer, 1967 - March, 1968

	II With Job		Total	Trad With Job		Total		
Sample	No.	%	N	No.	%	N	χ^2 [1]	p
Male	14	54	26	19	61	28	1.92	<.20, 2 tailed
Female	17	65	26	22	85	26	1.92	<.20, 2 tailed
Total	31	60	52	41	79	54	3.84	.05*, 2 tailed

1. χ^2 based on Mc Nemar test $(a-d)^2/(a+d)$.

* p = .05

4. Summary of Results

During the first year of the program our hypotheses were partially confirmed. There were no differences between groups on n-Ach or n-Aff, but II students were significantly lower in n-Power than traditional students, as predicted. There were no major differences between the full experimental and traditional groups on the other thought and attitude yield measures. However, II students learned significantly less than the traditional students as measured by the Iowa Test of Basic Skills. This initial learning lag disappears during the second year as the II students catch up virtually all lost ground. Over the two year period there were no significant differences between the II and traditional students in the amount learned as measured by the ITBS.

During the second year on the program, the initial difference between groups in n-Power disappears, while differences emerge between groups in achievement motivation and affiliative activities. In comparison with males in the traditional program, II males show significantly greater need to avoid failure in achievement-oriented situations (higher debilitating test anxiety) and significantly lower self-esteem. They are less likely to have a job, spend significantly less free time with others and have a significantly larger number of hobbies that they did eight or more times in two weeks. The overall picture of the program effects on II males suggests that they withdraw from extrinsically rewarded public achievement situations in favor of intrinsically rewarding individual activities such as hobbies.

At the end of the second year on the program, II females are significantly lower in n-Ach than traditional females, although both groups gain in this motive during the year. This finding is supported by results on two action measures. II females make more feedback errors on the math game (are less likely to follow a moderate-risk strategy characteristic of people with high n-Ach) and are less likely to have a job than female students in the traditional program. It appears that II females are less likely to seek out achievement-oriented situations, even though they say they value achievement strongly. Instead, II females spend significantly more free time with others although this apparently does not include a large number of structured group activities with friends. In contrast to II males who seem to seek out intrinsically rewarding private activities, II females appear to seek out affiliative activities more than achievement oriented situations.

DISCUSSION

The contract system of teaching and learning such as the one in Duluth is being implemented in many schools across the country. Leaders in education there and elsewhere are enthusiastic about the capacity of the contract system to provide instruction uniquely matched to individual students' needs. In fact, optimistic hopes for the system constitute a utopian vision of education: students will learn more and more rapidly; they will so thoroughly enjoy learning and school that the drop-out problem will decrease, absenteeism will be reduced drastically and the pursuit of knowledge will become a voluntary lifelong process; students will become more self-reliant, more highly motivated to achieve excellence and their growing self-esteem will reflect a lengthening history of personal accomplishments in and outside school. What is most impressive however, is the presence of dedicated educators who are implementing the contract system at a time when any change in school procedures is guaranteed to create opposition among the taxpayers, or parents, the teachers or students. Thus it is extremely unfortunate that the empirical data do not support any of the claims for the contract system. The students studied do not learn more or more rapidly; absenteeism is not reduced; achievement motivation significantly decreases, along with lowered self-esteem among the boys; outside of school the girls seek more non-academic, affiliative activities while the boys spend more time alone with their hobbies. Because these results contradict the intentions of the program planners it is important to re-examine the implementation of their aims.

The impact of any educational innovation cannot be guaranteed in advance. Usually there are unexpected effects and perhaps even unintended ones. Different types of students will respond differently to the same program as did the II boys and the II girls. Similarly it is perfectly reasonable to expect that students at different grade levels will react differently to the same program. For example, the patterns of response to the II program may be quite different in elementary school and senior high school. Even within one age level, a new method of instruction probably will have differential utility in different subject matters. Finally, it is unlikely that any existing educational theory is sufficiently sophisticated to predict accurately what program will have what effects on what type of students at what age levels in what subject areas. The theory of educational structure presented in this research made some incorrect and insufficient predictions. This overall appraisal is not a plea to preserve the status quo. Rather, it is a recognition that many types of instruction should co-exist within any school system, each type based on well reasoned relationships to explicit educational goals. It is a recognition that inductive, empirical research should be conducted to assess the program effects on a broad range of educational yields, e.g., thoughts, attitudes and actions both inside and outside school. It is doubly valuable and doubly difficult to encourage several educational innovations simultaneously and also to obtain valid research results that help improve those innovations.

Even within the contract system there are numerous procedural options that might produce different results if they are exercised. It is possible for students to take responsibility for creating their own contract objectives, the list of appropriate resources, the sequence of their contracts as well as the pace of their learning. When teachers make these decisions, by definition students do not engage in independent inquiry. It also is possible to have more exciting methods of demonstrating mastery through cognitive, affective and motor behavior, and to have as many methods in the cognitive domain as already exist in the traditional program. It may have been the exclusive focus on paper and pencil tests that increased test anxiety in the II boys. More complex types of scoring systems such as those in athletics, industry and research could be used to reward successful group efforts in addition to outstanding individual performance. A shared sum scoring system, for example, might have encouraged the II girls to focus their increased affiliative activities on learning goals.

The net result of developing all these options for students would be to make school learning more life-like and generalizable. In contrast to standard types of school tests, life problems are recognized and defined by the person, not by someone else who provides a multiple choice question at every moment of indecision. Good solutions to life problems usually require sound thinking, humane feelings and effective action, not just a correct answer. Solving life problems involves coordinated group effort as often as intelligent individual action and students could be rewarded for developing both types of learning.

Yet, even if all these options were introduced, they might not be sufficient to reach the stated goals of the program. The sine qua non of the contract system as presently defined is the specification of performance criteria for successful completion of the contract. The system is modeled after industrial product-oriented contracts. In contrast, free inquiry and independent life-long learning, as they are usually defined, value accurate perception of information, rationality and energetic pursuit of answers, rather than reproducing a pre-established, accepted conclusion. More emphasis is placed on defining a progressive sequence of problems than on guaranteeing a final result. The spirit of free inquiry encourages learners to follow their questions wherever it leads them since the process is more important than the product. Thus it is extremely difficult for a student or teacher to write an inquiry-oriented contract if they must state in advance precisely what will be known and how that knowledge will be demonstrated. However, inquiry-oriented contracts can be written if they are modeled after research contracts which state the problem to be investigated, the procedures to be used and the amount of effort that will be expended. As long as learning contracts are oriented primarily to learning products rather than to learning processes, this system of instruction may be incompatible with developing truly independent inquiry in students.

There is great flexibility within the contract system of instruction both in the number of procedural options and in possible overall orientations. It seems appropriate at this time to try out these additional innovations and to evaluate their impact. In this way there may be continued progress toward attaining the ultimate aims of the program.

BIBLIOGRAPHY

Alpert, R. and R.N. Haber. "Anxiety in Academic Achievement Situations." Journal of Abnormal and Social Psychology, 1960, Vol. 61, 207-215.

Alschuler, Alfred S. "How to Increase Motivation through Climate and Structure" Working Paper #8. Available through Achievement Motivation Development Project, 13 Kirkland Street, Cambridge, Mass. 02138.

Atkinson, J.W. (Ed.). Motives in Fantasy, Action and Society. Princeton, New Jersey: D. Van Nostrand Company, Inc., 1958.

Atkinson, J.W. and N.T. Feather (Eds.). A Theory of Achievement Motivation. New York: John Wiley and Sons, Inc., 1966.

Burris, R. "The Effect of Counseling on Achievement Motivation" Unpublished doctoral dissertation, Indiana University, 1958.

Coleman, J.S. et. al. Equality of Educational Opportunity. U.S. Department of Health, Education, and Welfare, U.S. Government Printing Office, Washington D.C., 1966, 288-289, 319-325.

de Charms, R.C. and H.W. Morrison, W.R. Reitman, and D.C. McClelland. "Behavioral Correlates of Directly and Indirectly Measured Achievement Motivation," in McClelland, D.C. (Ed.), Studies in Motivation. Appleton-Century-Crofts, Inc., New York, 1955, 414-423.

Hall, John and D.C. Jones. "Social Grading of Occupations" British Journal of Sociology, 1, 1950, 31-55.

Janis, I.L. "Personality Correlates of Susceptibility to Persuasion." Journal of Personality, Vol. 22, 1954 504-518.

Kolb, David A. "An Achievement Motivation Training Program for Underachieving High School Boys" Journal of Personality and Social Psychology 2 (6), 1965, 783-792.

Lefcourt, H.M. "Internal versus External Control of Reinforcement: A Review" Psychological Bulletin Vol. 65 No. 4, 1966, 206-220.

Mahone, C.H. "Fear of Failure and Unrealistic Vocational Aspiration" in Atkinson, J.W. and N.T. Feather (Eds.), A Theory of Achievement Motivation. New York: John Wiley & Sons, Inc., 1966, 169-183.

McClelland, David C. "Achievement Motivation Training for Potential High School Dropouts," Working Paper #4. Available through Achievement Motivation Development Project, 13 Kirkland Street, Cambridge, Mass. 02138.

McClelland, David C. The Achieving Society. New York: D. Van Nostrand Company, Inc., 1961.

McClelland, D.C., J.W. Atkinson, R.A. Clark, and E.L. Lowell. The Achievement Motive. New York: Appleton-Century Crofts, Inc., 1953.

McClelland, David C. and D.G. Winter. Developing an Achieving Society. Free Press, 1969 (in press)

Rodewald, Stephen S. "Developing Achievement Motivation in High School Boys and Girls," Unpublished Senior Honors Thesis, Harvard University, 1968.

Rotter, J.B., M. Seeman, and S. Liverant. "Internal vs. External Control of Reinforcements: A Major Variable in Behavior Theory," in Washburne, N.F., (Ed.) Decisions, Values, and Groups. London: Pergamon Press, Vol. 2, 1962, 473-516.

APPENDIX

This section includes a copy of the Student Questionnaire Profile and the Activities Survey used in Duluth. Each questionnaire is followed by the scoring systems used to code the data and any details on test procedure not included in the section on Measures.

The organization of the material is as follows:

I. Student Questionnaire Profile
   - A. Copy of the questionnaire
   - B. Changes on the spring questionnaire
   - C. Test Procedure for Part I - Addition Game
   - D. Scoring Prodecures
     1. Addition Game
     2. Harvard Research Questionnaire
     3. Subjective Goal Discrepancy Index

II. Activities Survey
   - A. Activities Survey - Boys' Form
   - B. Activities Survey - Girls' Form
   - C. Scoring Procedures for the Activities Survey
     1. Activities Checklists
     2. Travel
     3. Work
     4. Saturday Scorecard

Name ______________________________ Date ________________
last first

Age ____________________ Sex __________________

School __________________________ Grade in School ________

PART I A

ADDITION GAME

Instructions:

On the following page you will find 10 addition problems numbered in order of increasing difficulty. The first problem is the easiest, and the correct answer is worth 1 point. The second problem is slightly harder than the first. Therefore, the correct answer is worth 2 points. The third problem is worth 3 points, and so on, up through the tenth problem, which is worth 10 points. In otherwords, the harder the problem, the more points it is worth.

You will be given 30 seconds to do one problem only. Your task is to choose the problem that you can do to earn the most points. There are no points for wrong answers, for partial answers, or for extra answers.

You must choose what level of problem you will do now, before looking at the actual problems. Here are some sample problems and information to help you decide which problem you want to try.

SAMPLE PROBLEMS

2. (2 points)	5. (5 points)	7. (7 points)	10. (10 points)
63	55207	8605421	7352108365
50	20435	9578366	6199843247
+ 71	+ 81794	+ 6824775	+ 4995983701

The average 10th or 11th grader can do	# 7	in 30 seconds.	(7 points)
8th or 9th grader	# 6	in 30 seconds.	(6 points)
6th or 7th grader	# 5	in 30 seconds.	(5 points)

Circle the number of points you think you can earn in 30 seconds.
(The number of points = the number of the problem.)

1 2 3 4 5 6 7 8 9 10

DO NOT TURN THE PAGE UNTIL THE INSTRUCTOR TELLS YOU TO BEGIN.

test 1

1. (1 point)

$$\begin{array}{r} 5 \\ 4 \\ +\ 7 \\ \hline \end{array}$$

2. (2 points)

$$\begin{array}{r} 42 \\ 53 \\ +\ 64 \\ \hline \end{array}$$

3. (3 points)

$$\begin{array}{r} 918 \\ 423 \\ +\ 710 \\ \hline \end{array}$$

4. (4 points)

$$\begin{array}{r} 1524 \\ 8236 \\ +\ 3059 \\ \hline \end{array}$$

5. (5 points)

$$\begin{array}{r} 70331 \\ 56108 \\ +\ 81864 \\ \hline \end{array}$$

6. (6 points)

$$\begin{array}{r} 149703 \\ 785977 \\ +\ 897629 \\ \hline \end{array}$$

7. (7 points)

$$\begin{array}{r} 4582576 \\ 1516514 \\ +\ 6256978 \\ \hline \end{array}$$

8. (8 points)

$$\begin{array}{r} 44498642 \\ 53989497 \\ +\ 91548157 \\ \hline \end{array}$$

9. (9 points)

$$\begin{array}{r} 784960827 \\ 687092851 \\ +\ 268568793 \\ \hline \end{array}$$

10. (10 points)

$$\begin{array}{r} 7336827205 \\ 7652075879 \\ +\ 6953894686 \\ \hline \end{array}$$

Which problem did you do? ________

Did you finish the problem in 30 seconds? ________

Was the answer correct? ________

How many points did you earn? ________

The next test contains 10 similar problems and the same 30 second time limit. Which problem will you try to do this time? ________

DO NOT TURN THE PAGE UNTIL THE INSTRUCTOR TELLS YOU TO BEGIN.

test 2

1. (1 point)

$$\begin{array}{r} 3 \\ 7 \\ +\ 8 \\ \hline \end{array}$$

2. (2 points)

$$\begin{array}{r} 53 \\ 26 \\ +\ 70 \\ \hline \end{array}$$

3. (3 points)

$$\begin{array}{r} 734 \\ 923 \\ +\ 524 \\ \hline \end{array}$$

4. (4 points)

$$\begin{array}{r} 2495 \\ 8118 \\ +\ 6347 \\ \hline \end{array}$$

5. (5 points)

$$\begin{array}{r} 70375 \\ 62776 \\ +\ 84636 \\ \hline \end{array}$$

6. (6 points)

$$\begin{array}{r} 138725 \\ 609694 \\ +\ 787544 \\ \hline \end{array}$$

7. (7 points)

$$\begin{array}{r} 3821932 \\ 2734639 \\ +\ 8765432 \\ \hline \end{array}$$

8. (8 points)

$$\begin{array}{r} 54493153 \\ 62395732 \\ +\ 69737566 \\ \hline \end{array}$$

9. (9 points)

$$\begin{array}{r} 253924331 \\ 614984756 \\ +\ 958196274 \\ \hline \end{array}$$

10. (10 points)

$$\begin{array}{r} 5039606327 \\ 9473589877 \\ +\ 6727938596 \\ \hline \end{array}$$

Which problem did you do? __________

Did you finish the problem in 30 seconds? __________

Was the answer correct? __________

How many points did you earn? __________

The next test contains 10 similar problems and the same 30 second time limit. Which problem will you try to do this time? __________

DO NOT TURN THE PAGE UNTIL THE INSTRUCTOR TELLS YOU TO BEGIN.

test 3

1. (1 point)

6
2
+ 9

2. (2 points)

31
75
+ 63

3. (3 points)

746
902
+ 815

4. (4 points)

7417
5168
+ 8155

5. (5 points)

20598
63882
+ 92407

6. (6 points)

294692
189569
+ 782136

7. (7 points)

7406942
8471632
+ 5435168

8. (8 points)

96343869
37537677
+ 48767366

9. (9 points)

762453664
959347389
+ 883826957

10. (10 points)

9896245349
6063846883
+ 5618487977

Which problem did you do? ________________

Did you finish the problem in 30 seconds? ________

Was the answer correct? __________

How many points did you earn? __________

What is your total number of points for the three tests? __________

PART II

HARVARD RESEARCH QUESTIONNAIRE

The following pages contain statements of opinion. Each statement is followed by this sequence: + - 1 2 3. If you agree with the statement, circle the + sign. If you disagree, circle the - sign.

Then, indicate how much you agree or disagree by circling 1 for slightly, 2 for moderately, or 3 for strongly.

For example:

I enjoy work as much as play. + - 1 2 3

If you agree moderately with that statement, you would circle + to indicate agreement, and 2 to indicate medium, or moderate agreement.

If you disagree strongly with the statement, you would circle - to indicate disagreement, and 3 to indicate strong disagreement.

If you have any questions, please ask them now. Work quickly, and you will have ample time to complete Parts II and III.

		AGREE	DISAGREE	SLIGHTLY	MODERATELY	STRONGLY
1.	I enjoy work as much as play.	+	-	1	2	3
2.	The marks I get in class are entirely my own responsibility.	+	-	1	2	3
3.	Nervousness while taking an exam or test hinders me from doing well.	+	-	1	2	3
4.	I almost always give suggestions when my friends are trying to decide what to do.	+	-	1	2	3
5.	I nearly always strive hard for personal achievement.	+	-	1	2	3
6.	It is largely luck that we have stayed out of World War III as long as we have.	+	-	1	2	3
7.	Everytime I try to get ahead, something or someone stops me.	+	-	1	2	3
8.	I feel capable of handling myself in most social situations.	+	-	1	2	3
9.	In a course where I have been doing poorly, my fear of a bad grade cuts down my efficiency.	+	-	1	2	3
10.	I practically never do any more school work than what my teacher assigns.	+	-	1	2	3
11.	If I play my cards right, I can get most people to like me.	+	-	1	2	3
12.	I feel that my future peace and self respect depend upon my accomplishing some notable piece of work.	+	-	1	2	3
13.	When I am poorly prepared for an exam or test, I get upset, and do less well than even my restricted knowledge should allow.	+	-	1	2	3
14.	If I don't understand an assignment, I don't do it.	+	-	1	2	3

		AGREE	DISAGREE	SLIGHTLY	MODERATELY	STRONGLY
15.	Getting good grades seems to be largely a matter of taking the right course at the right time.	+	-	1	2	3
16.	I seldom have fears that my actions will cause my friends to have a low opinion of me.	+	-	1	2	3
17.	I set difficult goals for myself which I attempt to reach.	+	-	1	2	3
18.	People like me don't have much of a chance to be successful in life.	+	-	1	2	3
19.	Through discussion I can convince others.	+	-	1	2	3
20.	The more important the examination, the less well I seem to do.	+	-	1	2	3
21.	I always volunteer answers in class without being called on.	+	-	1	2	3
22.	I enjoy relaxation wholeheartedly only when it follows the successful completion of a substantial piece of work.	+	-	1	2	3
23.	Life is largely a gamble.	+	-	1	2	3
24.	It doesn't bother me to have to enter a room where other people have already gathered and are talking.	+	-	1	2	3
25.	I'm a leader in my group of friends.	+	-	1	2	3
26.	I work like a slave at everything I undertake until I am satisfied with the results.	+	-	1	2	3
27.	One should carry on an active discussion of politics in the hopes of obtaining a better world.	+	-	1	2	3
28.	During exams or tests, I block on questions to which I know the answers, even though I might remember them as soon as the exam is over.	+	-	1	2	3

	AGREE	DISAGREE	SLIGHTLY	MODERATELY	STRONGLY
29. If I don't agree with my friends' opinions, I keep it to myself.	+	-	1	2	3
30. When a man is no longer anxious to do better then, well, he is done for.	+	-	1	2	3
31. Making friends is largely a matter of being lucky enough to meet the right people.	+	-	1	2	3
32. In group discussions I usually feel that my opinions are inferior to those of others in the group.	+	-	1	2	3
33. The only time I help out at home is when I'm told to.	+	-	1	2	3
34. I find that my mind goes blank at the beginning of an exam, and it takes me a few minutes before I can function.	+	-	1	2	3
35. Success almost always turns out to be the result of perserverance and ability.	+	-	1	2	3
36. I feel that nothing else which life can offer is a substitute for great achievement.	+	-	1	2	3
37. I'd rather watch T.V. than try to think of something new to do.	+	-	1	2	3
38. I am so tired from worrying about an exam, that I find I almost don't care how well I do by the time I start the test.	+	-	1	2	3
39. I feel that I have little influence over the way other people behave.	+	-	1	2	3
40. Good luck is more important than hard work for success.	+	-	1	2	3
41. I don't make a very favorable first impression on people.	+	-	1	2	3
42. My parents never have to tell me to do my homework.	+	-	1	2	3

		AGREE	DISAGREE	SLIGHTLY	MODERATELY	STRONGLY
43.	Time pressure on an exam causes me to do worse than the rest of the group under similar conditions.	+	-	1	2	3
44.	People are responsible for their actions, both good and bad.	+	-	1	2	3
45.	I find myself reading exam questions without understanding them, and I must go back over them so that they will make sense.	+	-	1	2	3
46.	If my friends are doing something I don't want to do, or don't approve of, I would try to persuade them not to do it.	+	-	1	2	3
47.	Only ambition will bring a man's mind into full activity.	+	-	1	2	3
48.	Some people seem born to fail while others seem born to succeed, no matter what they do.	+	-	1	2	3
49.	When confronted with a group of strangers, my first reaction is always one of shyness and inferiority.	+	-	1	2	3
50.	It's useless to try to find a summer job around here because there is too much competition.	+	-	1	2	3
51.	When I don't do well on difficult items at the beginning of an exam, it tends to upset me so that I block on even easy questions later on.	+	-	1	2	3

PART III

BOYS

The following pages contain a list of different jobs. For each job, estimate how many of the boys in your class have enough general ability to get such a job someday if they wanted it. Show your estimate by placing an X in the appropriate column to the right of the list.

For example:

	the top few	the top 1/4	the top 1/2	the top 3/4	nearly the whole class
astronaut					
waiter					

If you think only the top few members of the class could become an astronaut, you would mark X in the first column. If you think practically every boy in the class could become a waiter, you would mark the column to the far right.

IF YOU HAVE ANY QUESTIONS, PLEASE ASK THEM NOW.

	the top few	the top 1/4	the top 1/2	the top 3/4	nearly the whole class
astronaut					
lawyer					
auto mechanic					
college professor					
policeman					
politician					
advertising executive					
private in the army					
actor					
insurance salesman					
computer operator					
pro football player					
psychologist					
high school teacher					
social worker					
truck driver					
coach					
doctor					
coal miner					
writer					
chef					
officer in the army					
bartender					
bricklayer					
taxi driver					

	the top few	the top 1/4	the top 1/2	the top 3/4	nearly the whole class
translator					
dept. store manager					
musician					
business executive					
newspaper reporter					
dept. store salesman					
carpenter					
hairdresser					
waiter					
leader of a band					
architect					
gas station attendent					
minister					
construction worker					
fashion designer					
electrician					
dock worker					
grade school teacher					
street sweeper					
veterinarian					
restaurant manager					

1. What % of your classmates have less general ability than you do? ______________________

2. Which job listed above is most like the job you want to have? ______________________

PART III

GIRLS

The following pages contain a list of different jobs. For each job, estimate how many of the girls in your class have enough general ability to get such a job someday if they wanted it. Show your estimate by placing an X in the appropriate column to the right of the list.

For example:

	the top few	the top 1/4	the top 1/2	the top 3/4	nearly the whole class
veterinarian					
sales girl					

If you think only the top few girls of your class could become a veterinarian, you would mark X in the first column. If you think practically every girl in your class could become a sales girl, you would mark the column to the far right.

IF YOU HAVE ANY QUESTIONS, PLEASE ASK THEM NOW.

	the top few	the top 1/4	the top 1/2	the top 3/4	nearly the whole class
lawyer					
artist					
librarian					
nurse					
airline stewardess					
secretary					
hotel maid					
receptionist					
scientist					
florist					
social worker					
factory worker					
writer					
grade school teacher					
dietician					
waitress					
telephone operator					
veterinarian					
actress					
sales girl					
fashion designer					
speech therapist					
kitchen help					
dental hygienist					
small shop owner					

	the top few	the top 1/4	the top 1/2	the top 3/4	nearly the whole class
dept. store buyer					
architect					
medical technician					
household help					
seamstress					
model					
religious vocation					
cafeteria worker					
file clerk					
go go girl					
restaurant manager					
housewife					
doctor					
physical therapist					
interpreter					
college professor					
movie ticket seller					
elevator operator					
hairdresser					
business executive					

1. What % of your classmates have less general ability than you do?____________________________
2. Which job listed above is most like the job you want to have? ____________________________

B. CHANGES IN THE SPRING STUDENT QUESTIONNAIRE PROFILE

In the Spring version on the Student Questionnaire Profile, three changes were made in the Addition Game: 1) 12 problems were offered on each round of the game instead of 10. The 11th problem had 11 columns of figures, the 12th, 12 columns; 2) A fourth round was added identical in format to rounds 1, 2 and 3; and 3) a new set of math problems was given. The new problems were matched with the former set on the number of columns of figures and on the number of columns on which students were required to carry. Parts II and III of the Student Questionnaire Profile were identical to the fall test.

C. TEST PROCEDURE FOR PART I - ADDITION GAME

The test instructions on page 1 of the Addition Game were read aloud. Students were then given approximately five minutes to read over the instructions to themselves and to decide which problem they would attempt on the first round of the game. After being given 30 seconds to complete the first problem, they were then asked to answer only questions 1 and 2 in the lower right hand corner of the test and then to make a bid for the next round. No answers for the problems were given because it was feared that some students might change their answers. They were told, however, that the problems would be corrected at a later date.

D. SCORING PROCEDURES

1) The Addition Game

The Addition Game was scored for risk-taking behavior in two parts; round 1 (test 1) was scored for initial level of risk; and rounds two, three, etc., were scored for use of feedback. The background for the scoring system stems from the finding that people with high achievement motivation tend to take moderate risks (those with about a 50=50 probability of success) while individuals with low achievement motivation tend to take either very low or very high risks (called chicken errors and dare errors, respectively).

Initial Level of Risk: Three scoring categories were used: Moderate risk, chicken error, and dare error. Since students were told that the average 7th grader could do problem 5 within the time allowed, we used a conservative definition of moderate risk to cover all initial bids from 4 to 7. Those bids of 3 or less were categorized chicken errors, and those of 8 or more, dare errors.

Initial level of risk was scored differently for the spring test because it appeared that students remembered their general level of performance on the fall test. We first scored for initial level of risk using the above criteria. Then we re-scored the first round defining a moderate risk as ± 2 the highest problem solved on the fall test, a chicken error as three or more under the highest problem achieved, and a dare error as three or more above the highest problem achieved. Since there were many fewer errors using the second scoring system, we felt it was legitimate to assume that students had remembered their former performance. Thus, the second scoring system was considered a more valid measure of risk taking for the spring test.

Use of Feedback: The remaining rounds of the Addition Game were scored for use of feedback. Each round (score and bid) can be scored only once. If a round fell into two of the categories listed below, it was scored in the category which appears closest to the top of the list. If any rounds were blank, use of feedback was not scored for that individual.

I. If a success occured on the previous trial at n--that is, a subject completed the problem bid in the time allowed--the subject has the following options and limitations.

   A. Under no conditions may n attempt n-1.

   B. N+1 must be attempted after two successes at n, whether or not the 2 successes are in a row.

   C. After a success at n, and a drop to n-1 (a IA error), n or n+1 must be attempted. This rule also applies to cases in which a subject is successful at n, then drops low and gradually progresses in succeeding rounds. If he stays at an n lower than his initial success, IC should be scored.

   D. After just one success at n, the subject had the option of trying n or n+1.

   E. Jumps of more than one, n to n+2, should not be tried unless it is trial two--first scorable round for "use of feedback". (Consider n to be the highest number at which the subject had been successful).

II. If a failure occured on the previous trial at n--that is, a subject failed to complete the problem bid in the time allowed--the subject has the following options and limitations:

   A. Under no condition can n+1 be tried.

   B. Usually n-1 should be tried. However, if he has only missed once, he may attempt n again. (If the majority of his trials at n have been successful, he should stay at n rather than moving to n-1).

C. Negative jumps of more than one, n to n-2, should not be made when a success has occured at a number closer to n, at n, or at a number above n. Otherwise they are acceptable.

Resultant measures:

Wrong direction errors:	Sum of IA and IIA errors
Chicken errors:	Sum of IA, IB, IC, and IIC errors
Dare errors:	Sum of IE, IIA, and IIB errors
Total Feedback Errors:	Sum of chicken and dare errors. (All wrong direction errors are automatically counted since they fall into one of these two categories).

Each feedback round was scored 0 if no error occurred, or a letter according to the type of error present. Scores were then summed for the number of specific errors listed above. Someone using a moderate risk strategy should have no errors, whereas those using a high or low risk strategy, will have three feedback errors. The final measures used in this research were 1) Initial Bid Errors, 2) Total Feedback Errors, and 3) Total Errors (sum of 1 and 2).

2) Harvard Research Questionnaire

The scoring key for the 51 statements in this questionnaire is given below with the question loading (positive or negative).

1	V-Ach
2	IE+
3	DA
4	OP+
5	V-Ach
6	IE-
7	COE
8	SE+
9	DA
10	OP-
11	IE+
12	V-Ach
13	DA
14	OP-
15	IE-
16	SE+
17	V-Ach
18	COE
19	IE+
20	DA
21	OP+
22	V-Ach
23	IE-
24	SE+
25	OP+
26	V-Ach
27	IE+
28	DA
29	OP-
30	V-Ach
31	IE-
32	SE-
33	OP-
34	DA
35	IE+
36	V-Ach
37	OP-
38	DA
39	IE-
40	COE
41	SE-
42	OP+
43	DA
44	IE+
45	DA
46	OP+
47	V-Ach
48	IE-
49	SE-
50	OP-
51	DA

V-Ach: Value of Achievement. A positive score on this scale indicates positive value placed on achievement.

IE: Internal vs. External Control of Reinforcement. A positive score indicates internal control of reinforcement.

DA: Debilitating Test Anxiety. A positive score indicates the presence of debilitating test anxiety.

OP: Origin-Pawn (Or Internal vs. External Stimulus of Behavior). A positive score indicates an origin (or internal) orientation.

SE: Self-Esteem. A positive score indicates positive self-esteem.

COE: Control of Environment. A positive score indicates a lack of control over one's environment.

Only agreement (+) or disagreement (-) were scored. Since several students left the second set of columns

(1, 2, and 3) blank, it was decided to ignore the degree of agreement or disagreement in order to retain a larger number of cases for analysis.

Responses were scored as follows: agree (+1), disagree (-1), and either blank or both agree and disagree (0). Scores were then reversed for negatively loaded questions so that all scores making up a scale were in the same direction. Blanks were scored 0 under the assumption that such a response indicated ambivalence on the part of the subject. If, for any scale, more than 20% of the items were left blank, the scale was considered unscorable.

3) Subjective Goal Discrepency Index

Subjective Goal Discrepancy is the difference between the subject's estimate of his own ability and his estimate of the ability required for his vocational goal. The subject's estimate of his own ability was taken from question 1 at the end of the vocational checklist, "What % of your classmates have less general ability than you do?" The percentage or fraction given by the student was reversed to make it consistent with the second part of the measure (below). The revised figure was the segment from the top in which the student considered himself; i.e., top 10%, top 25%, etc. If a subject answered "some" or "most", the answer was considered unscorable.

To determine the subject's estimate of the ability required for his vocational goal, we took the occupation given in answer to the question, "Which job listed above is the most like the job you want to have?" We then recorded the proportion of people in his class who he felt had enough general ability to do that job. In those cases where two occupations were listed, data was recorded for the first occupation listed. If the occupation given was not on the checklist, the answer was considered unscorable. Two exceptions were made: professional baseball player was considered comparable to professional football player, and private in the navy was considered comparable to private in the army. In recording proportions, "top few" was scored as 5% and "nearly the whole class" as 95%.

Subjective Goal Discrepancy was then determined by subtracting the student's estimate of the ability required for this vocational goal from his estimate of his own ability. A negative score indicated that the subject saw his vocational goal as requiring less ability than he estimated he had (i.e., a low risk), and a positive score, that the vocational goal required more ability than he estimated he had (i.e., a high risk). The median of the distribution of discrepancy scores, (regardless of sign) was used to divide the students into two groups, high and low discrepant. Achievement oriented risk-taking ability should be reflected in low discrepant choices.

PART II

A. ACTIVITIES SURVEY

(Boys' Form)

Name	______________________________	Date	______________
	Last First		

School ____

Birthdate __________________________

On the following pages you will find questions about how you spend your free time. Please tell us only about the things you do on your own time (either after school or outside of school).

Most of the questions can be answered by filling in the blanks with numbers. A few require short written answers.

AMDP - Harvard Graduate School of Education. Cambridge, Massachusetts, March, 1968.

SPORTS AND GAMES

Pick out each sport or game that you play at least once every two weeks while it is in season. Write in the blank how many times every two weeks you play it. (Do not include gym classes.)

Example: 5 Baseball - means that during the summer I play baseball 5 times every 2 weeks.

_____ Baseball
_____ Football
_____ Basketball
_____ Soccer
_____ Hockey
_____ Volleyball
_____ Tennis
_____ Handball
_____ Boxing
_____ Wrestling
_____ Ping Pong
_____ Playing Pool
_____ Badminton

_____ Gymnastics
_____ Track
_____ Golf
_____ Hunting
_____ Bowling
_____ Archery
_____ Skiing
_____ Ice Skating
_____ Roller Skating
_____ Fishing
_____ Swimming
_____ Scuba Diving
_____ Lifting Weights

_____ Boating
_____ Horseback Riding
_____ Chess
_____ Checkers
_____ Dominoes
_____ Bridge

Other sports and games not listed above. Please be specific:

_____ __________
_____ __________
_____ __________
_____ __________

Now look at the activities you have marked above.

1. Do you usually do any of these activities alone? _____ ; _____
   yes no

2. Put a star (*) in front of those activities you usually do alone.

HOBBIES

Pick out each hobby you have worked at in the past 2 weeks. Write in the blank how many times you have worked at it in the past 2 weeks. (Tell us only about activities either after school or outside of school.)

Example: __5__ Building models - means I worked at building models 5 times in the past 2 weeks.

_____ Working on cars or motorcycles

_____ Working on bikes or go-carts

_____ Repairing electric motors

_____ Working on TV's, radios or hi-fi's

_____ Building model train sets

_____ Building models

_____ Building toys

_____ Carpentry

_____ Metal shop work

_____ Photography

_____ Playing a musical instrument

_____ Practicing to be a singer

_____ Folk dancing

_____ Writing music

_____ Writing letters

_____ Writing stories

_____ Writing poetry

_____ Reading books

_____ Acting in plays

_____ Sculpturing

_____ Drawing

_____ Painting

_____ Collections (shells, stamps, coins, etc.)

_____ Breeding or training animals

_____ Growing crops

_____ Chemistry experiments

_____ Physics experiments

_____ Biology experiments

_____ Math problems & puzzles

Other hobbies not listed above. Be specific:

_____ ________________________

_____ ________________________

_____ ________________________

Now look at the activities you have marked above.

1) Do you usually do any of these activities alone? _____ yes ; _____ no

2) Put a star (*) in front of those activities you usually do alone.

GROUP ACTIVITIES

Pick out each activity that you have done with your friends during the past 2 weeks. Write in the blank how many times you have done it in the past 2 weeks.

Example: __9__ Visiting friends - means I have visited friends 9 times in the past 2 weeks.

_____ Visiting friends

_____ Playing cards with friends

_____ Going to movies with friends

_____ Going into town with friends

_____ Riding around with friends

_____ Talking on phone

_____ Taking out girls

_____ Going to parties

_____ Dancing

_____ Church activities

_____ Boys clubs

_____ Boy Scouts

_____ Buying clothes

_____ YMCA

_____ Watching TV with friends

Other group activities not listed above. Be specific:

_____ ___________________________

_____ ___________________________

TRAVEL

What is the farthest you have been away from home in the past two weeks?

Where did you go?

About how many miles away was it?

Whom did you go with?

How did you travel? (car? bus? bike? etc.)

How long did you stay?

WORK

1. Did you have a job last summer? _____ yes _____ no

a) What did you do?

b) Whom did you work for?

c) How did you find out about the job? (check one)

_____ I looked around for possible jobs

_____ I didn't have to look around--someone told me about the job

d) How did you finally get the job? (check one)

_____ I applied for the job

_____ Someone gave me the job--I didn't have to apply

e) How many weeks did you work?

f) How much, on the average, did you earn each week?

2. Do you have a job right now? _____ yes _____ no

a) If so, what do you do?

b) Whom do you work for?

c) How did you find out about the job? (check one)

_____ I looked around for possible jobs

_____ I didn't have to look around--someone told me about the job

d) How did you finally get the job? (check one)

_____ I applied for the job

_____ Someone gave me the job--I didn't have to apply

e) How many weeks have you had the job?

f) How much, on the average, do you earn each week now?

3. Have you had any other jobs since September? _____ yes _____ no

a) If so, what did you do?

b) Whom did you work for?

c) How did you find out about the job? (check one)

_____ I looked around for possible jobs

_____ I didn't have to look around--someone told me about the job

d) How did you finally get the job? (check one)

_____ I applied for the job

_____ Someone gave me the job--I didn't have to apply

e) How many weeks did you work?

f) How much, on the average, did you earn each week?

SATURDAY SCORECARD

We would like to know what you did last Saturday (or what you did the Saturday before if you were sick last Saturday). For each hour of the day, please write in the blank where you were, what you were doing and whom you were doing it with (e.g. brother, sister, parents, school friends, etc.).

5 A.M. ______________________________

____

6 A.M. ______________________________

____

7 A.M. ______________________________

____

8 A.M. ______________________________

____

9 A.M. ______________________________

____

10 A.M. ______________________________

____

11 A.M. ______________________________

____

NOON ______________________________

____

Saturday Scorecard, (Continued)

(8)

1 P.M. ______________________________

2 P.M. ______________________________

3 P.M. ______________________________

4 P.M. ______________________________

5 P.M. ______________________________

6 P.M. ______________________________

7 P.M. ______________________________

8 P.M. ______________________________

9 P.M. ______________________________

10 P.M. ____________________

____

11 P.M. ____________________

____

MIDNIGHT ____________________

____

1 A.M. ____________________

____

2 A.M. ____________________

____

3 A.M. ____________________

____

4 A.M. ____________________

____

Thank you for completing the survey.

B. ACTIVITIES SURVEY

(Girls' Form)

Name ______________________________ Date ____________
Last First

School ____

Birthdate ____________________

On the following pages you will find questions about how you spend your free time. Please tell us only about the things you do on your own time (either after school or outside of school).

Most of the questions can be answered by filling in the blanks with numbers. A few require short written answers.

AMDP - Harvard Graduate School of Education. Cambridge, Massachusetts, March, 1968.

(1)

SPORTS AND GAMES

Pick out each sport or game that you play at least once every two weeks while it is in season. Write in the blank how many times every two weeks you play it. (Do not include gym classes.)

Example: __5__ Baseball - means that during the summer I play baseball 5 times every 2 weeks.

_____ Baseball

_____ Basketball

_____ Soccer

_____ Field hockey

_____ Volleyball

_____ Tennis

_____ Ping pong

_____ Playing pool

_____ Badminton

_____ Gymnastics

_____ Track

_____ Golf

_____ Bowling

_____ Archery

_____ Skiing

_____ Ice skating

_____ Roller skating

_____ Fishing

_____ Swimming

_____ Scuba diving

_____ Boating

_____ Horseback riding

_____ Chess

_____ Checkers

_____ Dominoes

_____ Bridge

_____ Cheerleading

_____ Majorettes

Other sports and games not listed above. Be specific:

_____ ____________

_____ ____________

Now look at the activities you have marked above.

1. Do you usually do any of these activities alone? _____ yes _____ no

2. Put a star (*) in front of those activities you usually do alone.

HOBBIES

Pick out each hobby you have worked at in the past 2 weeks. Write in the blank how many times you have worked at it in the past 2 weeks. (Tell us only about activities either after school or outside of school.)

Example: __5__ Cooking - means I cooked 5 times in the past 2 weeks.

_____ Cooking
_____ Sewing
_____ Clothes designing
_____ Interior decorating
_____ Furniture making
_____ Ceramics
_____ Jewelry-making
_____ Leather work
_____ Building toys
_____ Sculpturing
_____ Drawing
_____ Painting
_____ Practicing to be a singer
_____ Playing a musical instrument
_____ Writing music
_____ Writing letters

_____ Writing stories
_____ Writing poetry
_____ Reading books
_____ Acting in plays
_____ Photography
_____ Folk dancing
_____ Ballet or modern dancing
_____ Breeding or training animals
_____ Growing crops
_____ Chemistry Experiments
_____ Physics Experiments
_____ Biology Experiments
_____ Math problems and puzzles
_____ Collections (shells, stamps, coins, etc.)

Other hobbies not listed above. Be specific:

_____ ______________________________

_____ ______________________________

Now look at the activities you have marked above.

1. Do you usually do any of these activities alone? _____ yes _____ no

2. Put a star (*) in front of those activities you usually do alone.

GROUP ACTIVITIES

Pick out each activity that you have done with your friends during the past 2 weeks. Write in the blank how many times you have done it in the past 2 weeks.

Example: ___9___ Visiting friends - means I have visited friends 9 times in the past 2 weeks.

_____ Visiting friends

_____ Playing cards with friends

_____ Going to movies with friends

_____ Going into town with friends

_____ Riding around with friends

_____ Talking on phone

_____ Going out with boys

_____ Going to parties

_____ Dancing

_____ Church activities

_____ Girls clubs

_____ Girl Scouts

_____ Buying clothes

_____ YWCA

_____ Watching TV with friends

Other group activities not listed above. Be specific:

_____ ______________________

_____ ______________________

_____ ______________________

(All remaining sections of the girls form were identical to the Boys form.)

C. SCORING PROCEDURES FOR THE ACTIVITIES SURVEY

1) Activities Checklists

On each of the activities checklists (sports and games, hobbies, and group activities) we counted: 1) the number of activities checked, 2) the number of activities done 3-7 times in two weeks, and 3) the number of activities done 8 or more times in two weeks. Cutting points at 3 and 8 were determined by looking for natural breaks in the distribution of frequency of participation in activities for a sample of the students tested. In addition, the number of activities done alone was recorded for sports and games and for hobbies.

In scoring the group activities checklist, four categories were excluded: church activities, clubs, scouts, and YMCA or YWCA. Unlike the other activities on the checklist, these four are organizational in character and most likely call for some elements of achievement or power motivation from participants. Since this list was to provide a measure of affiliative activities, we decided to limit our analysis to those categories which were relatively unambiguous.

Note on the Sports and Games Checklist: Research done by Kulakow (McClelland, 1961) found that those cultures higher in n-Ach tended to play more competitive, individualistic games. On this basis we planned to group sports and games on the checklist into the following four categories: group competitive, individual competitive, group non-competitive, and individual non-competitive; and then study differences in participation in each type of activity. However, in attempting to group sports and games, we found the distinction between competitive and non-competitive difficult to work with. Many activities, such as swimming, gymnastics, skiing, etc., might easily fall under either classification. For these reasons, the results from the Sports and Games Checklist were not analyzed for this study. Further revisions in this part of the survey appear to be in order.

2) Travel

Inclusion of questions on travel stemmed from McClelland's findings that those primitive cultures with higher n-Ach in folk tales travel significantly more and that those modern cultures with higher n-Ach show a greater interest in air travel and show a greater number of emigrants per capita during times of stress (McClelland, 1961). From these findings we felt that individuals with higher achievement orientation would be more apt to travel and to travel farther. Upon re-examination, the questions used on the activities survey did not provide a good measure either of the extent of travel or of an exploratory orientation. The questions all referred to the longest trip taken within the last two weeks, rather than getting at the frequency or extent of travel during this time. Further, since responses were limited to the longest trip (often taken by the student with his family) we were not able to get an idea of the extent to which students took trips on their own initiative. For these reasons, the results on this section were not analyzed.

3) Work

For each of the three sections on work (summer job, present job, and other jobs since September) we scored for 1) whether or not the individual had a job, and 2) initiative in getting the job. All jobs listed were scored except those that involved working for family without pay. It was felt that such jobs involved compliance with family demands, rather than choice in the use of leisure time, and therefore were inappropriate for this measure.

The index of initiative in getting a job combined scores from the following two questions:

1. How did you find out about the job?
    a. I looked around for possible jobs. (Score 1)
    b. I didn't have to look around--someone told me about the job. (Score 0)
2. How did you finally get the job?
    a. I applied for the job. (Score 1)
    b. Someone gave me the job--I didn't have to apply. (Score 0)

The Scores from these two questions were added together to yield an index with a range of scores from 2 (high initiative) to 0 (low initiative).

4) Saturday Scorecard

In coding the Saturday Scorecard we distinguished four types of activities: 1) Purposeful activities are defined as activities instrumental in attaining achievement or skill-oriented goals; 2) Pastime activities are oriented toward relaxation, entertainment or affiliative goals; 3) Neutral activities are routine activities related to personal upkeep or family chores; and 4) Unknown or unscorable activities included those which were insufficiently described to be placed into one of the first three categories. For two of the above, purposeful and pastime activities, further distinctions were made according to whether the activity was done alone or with others.

Activities were grouped under category headings as follows:

Purposeful Hours

a. doing a salaried work
b. working on a hobby
c. organizing or running an activity
d. doing homework
e. participating in sports (YMCA, YWCA, Scouts, clubs were included here)
f. taking a trip
g. shopping alone
h. travelling towards a destination if the subject is involved in a purposeful activity once at destination.

Pastime Hours

a. attending sports events (as spectator)
b. going to movies
c. going to parties
d. "goofing" or riding around
e. shopping with others (other than parents)
f. listening to radio, records, or T.V.
g. travelling towards a destination if the subject is involved in a pastime activity once at destination.

Neutral Hours

a. eating
b. getting dressed or getting ready to go out
c. doing required chores around the house

Unknown or Unscorable Hours

If not enough information to score in categories above.

Each of the 24 hours on the Saturday Scorecard which was not spent in sleep was assigned to one of the eight categories: purposeful-alone, purposeful-with others, purposeful-no information who with, pastime-alone, pastime-with others, pastime-no information whom with, neutral and unscorable. Cases in which more than one activity was listed for the hours were coded according to the category appropriate for the majority of activities listed. In some cases, we relied on the flow of activities to guide us in coding mixed hours. Scoring was done by the writer, with consultation on difficult or ambiguous hours with another coder.

In addition to a score for (number of hours spent in the activity) each of the categories listed above, four additional measures were recorded: 1) the hour the student got up on Saturday, 2) the number of hours the student was up (not sleeping), 3) the number of operant hours (number of hours up minus the number of neutral hours), and 4) the number of scorable operant hours (number of operant hours minus the number of unscorable hours). Operant hours are defined as those in which the student has a choice concerning his activities.

In the analysis of the data, purposeful and pastime hours were converted into proportions based on the number of scorable operant hours. This was done to restrict our comparisons to those hours in which we assumed students had a choice concerning their activities, and in which we had confidence in the appropriate categorization of the activity.

Chapter 6

AN EVALUATION OF THE MOTIVATIONAL IMPACT OF INDIVIDUALIZED INSTRUCTION AT MEADOWBROOK JUNIOR HIGH SCHOOL

by Dora Zelnicker and Alfred Alschuler

ABSTRACT

The purpose of the present research was to examine the motivational impact of structural changes in the learning environment. Forty-two matched pairs of students enrolled in both the Continuous Learning and the Traditional program at Meadowbrook Junior High School were selected for study. The two programs differed in several features: locus of decision-making, nature of obstacles, and nature of the scoring system. Thematic Apperception Tests were used to measure the effects of the two programs on achievement (n-Ach), affiliation (n-Aff), and power motivation (n-Pow). The hypothesis that CLP students would show higher scores in n-Ach was disconfirmed, although an interesting Sex-x-Program interaction appeared. Significantly lower scores on n-Pow for CLP confirmed the hypothesis that the CLP tends to reduce students' power concerns. And finally, no significant differences were found between CL and Traditional students for affiliation motivation.

A tentative statement was made suggesting that the lack of emphasis on explicit, absolute standards in the CLP may be incompatible with the goals of agency or achievement motivation. Emphasis on individual effort and individual standards may lead instead to one of several possible responses: a feeling of rejection or abandonment on the part of students to teachers, or a feeling of freedom to actively explore and manipulate one's environment. Further attention must be given to the problem of managing students' perceptions of new learning structures.

Introduction

The purpose of the present research is to assess the effects of a restructured school learning environment on students' motivation. Past research has indicated that courses designed to increase students' achievement motivation result in increased grades in school (Burris, 1958; Kolb, 1965), and in more serious future-oriented career planning (McClelland, 1968). Among businessmen, achievement motivation courses significantly increase entrepreneurial behavior (McClelland & Winter, 1969, in press). There also is evidence suggesting that changes in the learning structure in normal school courses can have a significant effect on the achievement motivation of students. Alschuler (1967) has shown that when the learning process of a tenth grade typing class was restructured to cue in achievement motivation, the typing speed of those students increased significantly more than a matched group taught in a more traditional manner. Similarly, a fifth grade mathematics class, restructured to arouse achievement motivation, showed dramatic gains in mathematics achievement compared to the previous year when the same students taught by the same teacher learned much less. In the fifth grade, the average gain as measured by the Stanford Achievement Test was three years compared to 0.2 of one year in the fourth grade. No direct evidence was available to assess the carry over effects of the achievement oriented environments on the spontaneous frequency of students' achievement thinking: their n-Ach. The present study examines the motivational yields of a restructured learning environment rather than the gains in tested knowledge and skills.

In the long run, changes in motivation may be of greater importance than changes in grades. Although parents and teachers are concerned primarily with grades (Stanford Achievement Test scores, Scholastic Apptitude Tests, etc.) and motivation only insofar as it effects the amount a student learns, the research evidence indicates that motivation is of primary importance. In general, grades best predict grades at the next level in school. The Scholastic Aptitude Test (SAT) score is a reasonably good predictor of college grades. However, professional progress and creative contributions are unrelated to success in college (McClelland, et. al., 1958). On the other hand certain personality factors, such as achievement motivation, do predict long term career choices and career success (McClelland, 1966; Clayton, 1965). This combination of findings suggests that increasing motivation should have higher priority as an educational goal than increasing knowledge. Not only is this priority reversed in current educational policy, but also there is almost no evidence that secondary schools and colleges significantly increase any of these critical personality factors (Jacobs, 1957). Obviously it is important to find out if a restructured learning environment can change the levels of students' motivation, and if so, what environmental factors are responsible for the changes.

Any learning situation can be viewed as a game with goals, rules, players, equipment, etc. Alschuler (1968) has presented a taxonomy of games which can be used to diagnose the motivational demands of different types of learning situations, or learning "games", for achievement, affiliation and power motivation. All games, as opposed to pastimes or rituals, have scoring systems, obstacles to be overcome, and methods of making decisions about moves, strategy, and tactics. Differences in scoring systems, locus of decision making, and obstacles determine the motivational character of the game, or in other words, the motivational demands of the learning environment.

The scoring system used in schools, as in other situations, defines a salient demand of the learning environment. A "O-Sum" grading system, where a student's performance is determined only by comparison to others (i.e., on the curve) leads to competition, rivalry and power concerns among students. A "Non-O-Sum" grading system, where the number of points is not constant, and each player is free to earn as many points as he can, tends to encourage independent, self-reliant accomplishment and achievement thinking. A "Shared-Sum" scoring system, as used in team sports but seldom in school, tends to encourage affiliation motivation since a point earned by one player is a point for all.

The locus of decision making constitutes another important way in which students' motivation can be effected. If the teacher determines the content, pace, and quantity of learning, then teacher and student often become opponents. Power motivation is encouraged, leading students to comply with the standards dictated by the authority. If the students, themselves, determine their educational goals, they are obliged to assume personal responsibility for their decisions. Self-reliance, independence, and achievement concerns are likely to be more dominant. There are many subtle ways in which schools assume responsibility for making decisions about how and what students shall learn, e.g., the degree to which the school day is organized. When the typical learning day is divided up into a series of eight 40 minute classes, this rigidly-imposed schedule conveys to the student that some external agent is controlling his educational career. Insofar as he complies with the prescribed schedule, it is assumed that his needs will be fulfilled and his success (as defined by school authorities) assured. The value of actively reflecting and acting upon one's own best interests, needs, and desires is not encouraged. Compliance is valued and power concerns rather than achievement concerns are generated. Affiliation motivation is encouraged when decisions are made by teams or groups, a situation that rarely occurs in schools sanctioned by the teacher.

Another aspect of the learning structure influencing motivation is the nature of the obstacles to success. If the teacher makes most of the important educational decisions for students or fails to make his expectations explicit, the teacher himself becomes the major obstacle to success. If the teacher is not in the role of major decision maker, a more collaborative, coaching relationship between teacher and student can be developed: thus shifting the role of the teacher from the "opposition" to "coach". In this situation the major obstacle is the material to be mastered and the personal skills of the student necessary for mastery. Achievement rather than power is the most valued motive.

A number of school systems are attempting to make fundamental changes in the process of learning similar to the types of changes described above. Among these forward looking innovative schools is Meadowbrook Junior High School in Newton, Massachusetts. During the first three years of the Continuous Learning Program (CLP) at Meadowbrook, 150 students (half of the class) were randomly selected to remain in the Traditional Learning Program. In addition, at the end of the second and third year on the program, Thematic Apperception Tests, (our principle measure of achievement, affiliation and power motivation) were administered to all students. For these reasons Meadowbrook was a suitable place to assess the degree of change in motivation resulting from a restructured learning environment.

DESCRIPTION OF CONTINUOUS LEARNING AND TRADITIONAL PROGRAMS AT MEADOWBROOK JUNIOR HIGH SCHOOL

As principal of Meadowbrook Junior High School in 1962, Mrs. Bettina King introduced a new educational program to achieve the following goals:

> "To help each student learn how to take charge of the development of his own potential and to understand that only he is responsible for his learning; to help each student become personally involved in his learning by actively exploring his own resources and those of the school and the larger environment; to help each student develop enough confidence in himself and in others to be able to think imaginatively and explore openly ideas, values, and relationships; to help each student find true satisfaction in learning." (Progress Report of Continuou
> Learning Program, 1965)

These goals are often summed up in two concepts, "agency" and "creativity". The CLP attempts to develop in students a belief that they are agents of their own behavior, that they control what happens to them. Also, the CLP attempts to stimulate students to think creatively, act imaginatively and reach unique solutions. There is considerable overlap between these stated goals and the nature of achievement motivation. Achievement motivation is a pattern of thought concerned with attaining some kind of excellence, e.g., finding unique solutions to difficult problems, improving oneself, etc. People with this pattern of thoughts tend to take greater personal responsibility and initiative, they explore their environment more actively, take carefully calculated reasonable risks, and utilize feedback from their actions more effectively (McClelland, 1953; Atkinson, et. al., 1958; McClelland, 1961). Although "agency" and "creativity" are more than "achievement motivation", the core of these several personality factors is identical. Thus, the effect of the CLP on students' achievement motivation becomes one critical test of the program's efficacy in attaining its stated goals.

During the summer of 1962, Mrs. King planned the program with a group of interested teachers recruited for this purpose. The design of the experimental program was implemented during the 1962-63 school year with 150 randomly selected 7th, 8th, and 9th grade students. Each succeeding year, more students were introduced to the CLP so that in three years all students in the school were on the new program. From its inception, a climate of experimentation and change has prevailed due to several factors. A research department within the school was established, headed by Mr. Charles Goff. Young and talented teachers were recruited from the Harvard Graduate School of Education, and were given freedom to try new approaches. There was close and sometimes hostile scrutiny given to the program by parents. Finally there have been continued efforts by Mrs. King and her staff to improve the program.

Considerable variation exists in the way classes are run by different teachers but the stated goals of the program (above) act as a unifying philosophic orientation. Beyond these variations there are several major structural features common to all of the CLP classes. These features are relevant to our theoretical model of motive-including properties of the learning environment.

a) House System

The CLP is organized into four Units containing children of all ages, ability levels, and interests. Six House Advisors and a Guidance Counsellor make up a Unit Team, whose function is to devise the teaching techniques and materials they feel will best meet the needs of the students. Weekly meetings of the Unit Team are held to pool the resources of the team members, thereby allowing them to understand each student and make appropriate plans to help them.

Students are assigned to Houses led by House Advisors (teachers) which meet four times a week, giving the House Advisor an opportunity for group activity and for frequent conferences with the individual students. The House provides the student with time and place for assistance in choosing courses, making schedules, defining his goals, and evaluating himself in terms of them. The House Advisor also handles academic, social, and discipline problems of the students, approves courses chosen by the students, suggests remedial courses where necessary, remains alert to the possibility of potential failure, and meets with parents twice a year in conferences.

In the traditional program, a student's relationship with a member of the staff is most often the result of a problem encountered during class. The learning situation is structured such that any affiliative relationship occurs as a matter of chance or at a teacher's initiative, for the teacher has relatively few opportunities to confront the student in other than the formal teaching situation. The result is a more impersonal relationship between the student and his teachers characterized by formality, and sometimes, fear.

The Advisor System serves to narrow this traditional gap between students and the formal authority structure. This system, with its informal interpersonal orientation, demonstrates to the student that there is someone in the school who is actively concerned with his problems and his progress. With this change in the student's relationship to authority comes a change in the student's role. He is encouraged to become an active agent in determining his educational development. The teacher is no longer regarded as an obstacle to success, but as a coach. The student is no longer put in a position of subordination where rewards are contingent on the degree to which he satisfies the requirements established by teachers. The role of the teacher and Advisor becomes affiliative rather than power-oriented, leaving the student freer to define his goals and thereby assume greater personal responsibility for both his successes and failures.

b) Locus of Decision-Making

One of the largest structural changes instituted by the CLP was a shift in the locus of decision making from teachers to students. The areas in which these changes occurred included choice of courses, procedural rules governing content, sequencing and rate of work, and organization of time.

In the traditional program, a prescribed curriculum is followed, allowing students little choice in terms of course offerings. With the exception of a Foreign Languages choice, the student's day is filled with a schedule of courses identical to all of his classmates. The CLP, on the other hand, provides the opportunity for students to select, within certain limits, the curriculum they will follow. Within the areas of literature, social studies, and science, for example, the student is free to choose from among the eight to ten courses offered in that subject. The student's choice is limited to a slight extent by the level of difficulty of the course, by his Advisor's suggestions, and by more subtle influences like the quality of the teacher, or the peer pressure to "travel together". Nevertheless, in most cases, the final decision rests with the student himself.

Once enrolled in a course, the traditional student is expected to learn the material as presented by the teacher, using the resources and textbooks which she has deemed appropriate to the course. Along with content, it is the teacher who determines the sequencing of the material, the rate at which it should be mastered, and the method by which students' progress will be judged. The CLP student is allowed greater autonomy in the classroom. Having agreed to the explicitly stated goals of the course, the student is allowed a greater amount of freedom in fulfilling his objectives. Unlike students in the traditional program, the CLP student himself decides what material will be covered, in which sequence, and within what amount of time. Students are bound to their decisions by a system of Contracts, a student-teacher agreement explicitly stating the conditions of work. For example, a student might undertake to complete three self-selected books and an essay within three weeks in his Russian Literature course. Having discussed the terms with the teacher, they both sign the written contract. Upon completion of the task, the contract is approved and commented upon by the teacher. Remarks are limited to the quality of the individual contract submitted, rather than to a comparative evaluation in terms of a class standard.

The degree to which an individual student may determine the conditions of his contract varies from class to class and from teacher to teacher. In the more traditionally-run CLP mathematics and foreign languages classes, the requirements are relatively rigid and explicit. In literature, science, and social studies, on the other hand, the learning situation is relaxed. Some teachers insist on a minimum of required assignments, while other teachers allow the student almost total freedom in determining his assignment.

The degree to which the contracts are individualized is dependent on the homogeneity of interests and ability among class members. In less homogeneous classes, the contractual criteria of quality, pace, and quantity of work are modified to fit the potentialities of the students. In more homogeneous classes, the teacher might suggest thirty assignments for the term, making the first ten compulsory, and allowing the remainder to serve as a guideline. The norm for most classes seems to indicate that a certain degree of structure does exist for those who require or desire it, while all students are encouraged to take the options available to direct their own learning.

Another important way in which CL and Traditional students differ is in their freedom to select unscheduled activities. The organization of the traditional school day is clearly delineated in advance. Each student is expected to attend a specific class during every hour of the day. Moreover, the organization of activities remains constant from day to day. The CLP student is allowed one hour of unscheduled time per day during which he may participate in one of several activities. Alternative include consultations with House Advisors, catching up on work at the library, or pursuing individual interests at one of several resource laboratories. Although not formally stated, students may opt to spend their free time in conversation with friends.

Unlike the students in the traditional program, whose schedule is identical to that of his classmates, CLP students are provided with sufficient time to express their individual tastes. The opportunity to individualize activities within chosen classes also allows the CLP student additional latitude to express behaviorally to himself and others the course which his education is taking. These options require the student to assume greater personal responsibility for his education.

c) Grading System

The CLP students are evaluated in a variety of ways. The Contract System provides one form of evaluation whereby assignments are judged in relation to the expectations set by teacher and student in advance. It is difficult to determine whether the standards for evaluation are more a reflection of the teacher's expectations of a student, the student's expectations for himself, or whether it is, in fact, a combination of the two. Nevertheless, one may conclude that the scoring system implied by the Contract form of evaluation is not an O-Sum system with a fixed number of points for which all class members compete. Neither is it a Shared-Sum scoring system where points earned by one class member are shared by all of his classmates. The Contract System most closely resembles a Non-O-Sum scoring system in which the number of "points" an individual may gain is a function of the amount of effort he wishes to invest in the task. However, the standards are not fixed and common to all students as is the case with most Non-O-Sum scoring systems.

A second form of evaluation used in the CLP is the Test Profile. This form attempts to rate the student's achievement relative to his ability, as measured by a series of ability and aptitude tests. A series of standard comments by teachers indicate to parents and students whether the student is performing below, above, or in direct proportion to his tested abilities. This system means that a low ability student performing to capacity might receive the same comment as a higher ability student performing at his capacity.

A third form of evaluation consists of teacher-parent conferences conducted twice a year. Like the Test Profile, teacher's remarks are made in relation to the perceived capacity of the individual student. Both forms of evaluation are consistent with Non-O-Sum scoring systems. CLP students receive the last form of evaluation at the end of their last year on the program. It is a predictive grade given by each of their teachers for the subject areas and "track" the students have chosen for the 10th grade year. Under this system, an average ability student might receive "A" predictions for each of his subjects if he elected to enroll in the low ability track in high school, whereas he might obtain a predominance of B's and C's if he decided to choose the highest ability track. As in each of the other forms of evaluation, the set of standards by which the student is judged are neither fixed nor common to all class members. This type of evaluation most closely resembles a Non-O-Sum scoring system. But since the teacher's perception of the student's ability relative to other students is used as a component in the final evaluation, the grading system is partially a O-Sum scoring system.

In contrast to the CLP, in the traditional classes the results of class tests, final examinations, and term paper grades are combined by teachers in various ways to comprise the final grade. Students are sometimes informed of the relative weights of these tests in determining their final grades, but often this information is not made explicit until the end of the term. Grades are then presented to students in the form of their relative standing within the class. A teacher may decide from the list of prepared grades what percentage of the total will constitute an A, what percentage a B, and so on. The student's relative standing within the class, then, ultimately determines the grade he will receive on his report card.

Although different in form, variety and regularity, both the CLP and Traditional programs employ a combination of Non-O-Sum and O-Sum scoring systems and neither systems use Shared-Sum scoring methods. This theoretical classification, however, hides an important difference between the scoring methods used by the two programs. In the traditional program all students compete against the same standards and grades allow for comparison against one's past performance or against other students' grades. In the CLP the direct comparison of "comments" to other students' "comments" is not possible, because they are based on the teachers' private perception of the students' relative potential. In other words, "effort" is more important in the CLP than reaching a high level of attainment measured against fixed and public standards. With this de-emphasis on "standards", there is the increased emphasis on having "each student learn how to take charge of the development of his own potential and understand that only he is responsible for his learning".

d) Hypothesis

The two clearest innovations in the CLP are a shift in the locus of decision making and a more collaborative relationship with teachers. In almost every sphere of his academic functioning, the student is encouraged to take the initiative. As opposed to the Traditional student, the CLP student is expected to decide which courses he will take, how much work he will complete within a specified amount of time, and by which criteria he will be evaluated. For the Traditional student, all these decisions have been made; his only basic strategy for success in school is compliance with the expectations of others. With this change in the locus of decision making comes a concomitant change in the nature of the student's relationship to authority. The CLP teacher comes to be perceived as a partner or "coach" in the student's educational development, while the Traditional teacher maintains her role as the ultimate controller of the student's educational fate. Both of these changes suggest that there will be decreased concern with power among the CLP students.

The innovation in CLP grading is less striking and the motivational implications are less clear. It is uncertain whether the grading system will foster concern with unique accomplishments (higher n-Ach) or concern with fewer and lower standards (lower n-Ach). On balance, however, the greater necessity for independent, self-reliant decision making should lead to increased n-Ach.

No predictions can be made about changes in n-Aff since there is no Shared-Sum scoring, little "team" decision making and little team work instrumental to learning. At least, there are no formal structural incentives for greater affiliative activities built into the CLP.

SAMPLE

The population (N=300) from which the sample was chosen consisted of all seventh grade students in Meadowbrook Junior High School during the academic year 1963-64. Half of these students were randomly assigned to the CL and Traditional programs. Students from the two programs were individually matched on five variables known to be correlated with achievement motivation:

1. Sex - All subjects matched
2. Age in years and months - All subjects were within a one year range.
3. Intelligence - All subjects were matched within three points on the Otis Self-Administering Test of Intelligence, Form B, given in June, 1965.
4. School Achievement - All subjects were within 50 percentile points on the School and College Ability Test, (SCAT), administered in June, 1965.
5. Socioeconomic Status (SES) -- Father's occupation was used as a measure of SES, according to a modified eight level system of Hall and Jones' (1950) Occupational Classification System. All subjects were matched within five levels.

Students were excluded from the sample who (1) had entered Meadowbrook Junior High School after September, 1963, (2) had repeated any grade since 1963, (3) had switched programs during the three years at Meadowbrook Junior High School, or (4) lacked background data or test scores. For convenience, we decided not to obtain more than 100 of the 300 subjects, since a smaller sample size was adequate for statistical purposes. The resultant samples consisted of 42 matched pairs, 24 of which were female, and 18 male pairs. Matching data is summarized statistically below.

TABLE 6.0

Comparisons of CLP and Traditional Students at Meadowbrook Junior High School on Age, Intelligence, and School Achievement.

Matching Variable		CLP	TRADITIONAL			
		Mean	Mean	d	t[1]	p[2]
Age (in months)	Total	146.4	146.1	0.3	.44	n.s.
	Male	147.1	147.4	-0.3	-.05	n.s.
	Female	145.5	145.5	0.0	0.00	n.s.
OTIS IQ	Total	113.6	113.6	0.0	0	n.s.
	Male	112.7	112.4	.3	1.03	n.s.
	Female	114.2	114.5	-.3	-1.10	n.s.
SCAT [3]	Total	54.9	51.8	3.1	1.04	n.s.
	Male	60.9	54.5	6.4	1.40	$<.20$
	Female	50.4	49.7	.7	.17	n.s.

1. t values based on the formula for difference between correlated means.
2. p values at .05 level of significance for two-tailed tests.
3. School and College Apptitude Test (SCAT) scores represent percentile scores judged against national norms.

TABLE 6.1

Comparison of CLP and Traditional Subjects at Meadowbrook Junior High School on Socio-Economic Status (as measured by father's occupation)

	CLP[2]			TRADITIONAL[2]		
Socioeconomic Level	Total	Male	Female	Total	Male	Female
1. Professional & High Administration	11 (26)[1]	5 (27)	6 (25)	7 (17)	2 (11)	5 (22)
2. Managers, Executives, Officials	14 (33)	6 (33)	8 (33)	22 (52)	8 (44)	14 (58)
3. Inspectional Supervisors, High-Grade Non-Manual	9 (21)	5 (27)	4 (16)	5 (12)	1 (6)	4 (16)
4. Clerical, Sales, Lower-Grade Non-Manual	3 (7)	1 (6)	2 (8)	2 (5)	1 (6)	1 (4)
5. Skilled Craftsmen - Foremen	2 (5)	0 (0)	2 (8)	5 (12)	5 (27)	0 (0)
6. Semi-Skilled Operatives	2 (5)	1 (6)	1 (4)	1 (2)	1 (6)	0 (0)
7. Unskilled	1 (2)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
8. Unemployed						
9. Unscorable						

1. Percentage of total in brackets.

2. A sign test of differences between Total CLP and Total Traditional resulted in a z score at 1.67, probability n.s.

The samples are well-matched on these important background variables. However, there are some limitations inherent in the sample. The overall IQ and SES levels are relatively high compared to national norms, thus limiting the generality of the findings somewhat. Also, we chose to use the SCAT scores as a matching variable instead of as a yield variable, even though students had been on the program for two years when they took the SCAT. A slight but not statistically significant difference exists at the end of two years in favor of the CLP group. This trend is more marked for the CLP boys than for the CLP girls.

METHOD

The Thematic Apperception Test (TAT) is the standard technique used to measure achievement, affiliation, and power motivation, (McClelland et. al., 1953) as it can be scored for the spontaneous frequency and extent of various motivational thought patterns. TAT's were administered to students in June, 1965, after two years at Meadowbrook Junior High School, and in June, 1966, after three years at Meadowbrook. Testing took place on a school wide basis and was administered by school and guidance personnel. The TAT presented in June, 1965, consisted of a series of three pictures in booklet form. The first picture was a sketch of an adult male reading from a book, with a circle of three children around him. The second sketch portrays two men and a woman seated around a desk. The third picture is of a young boy, with a vague expression on his face, his face cupped in his hands. After looking at one of the pictures for 15 seconds, students were given twelve minutes to write a story about the picture, using the following four standard TAT questions as a guide.

1. What is happening? Who are the people?
2. What has led up to the situation? That is, what has happened in the past?

3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

In June, 1966, all students were retested using the same test in the identical format. The order of the pictures was reversed in the second testing. Both sets of TAT's were scored for achievement motivation (n-Ach), affiliation motivation (n-Aff), and power motivation (n-Pow), according to the scoring system described in Atkinson, et. al. (1958). The scoring was performed professionally by members of the Motivation Research Group.[1] Although each motive was scored by a different rater, each rater scored both the 1965 and 1966 tests for their respective motives.

RESULTS

Analysis of the data is presented in the order in which the hypotheses were stated. The scores on n-Pow, n-Ach, and n-Aff are group means for the three motives.

[Graph 6.0 and Table 6.2 go about here.]

[2] The Motivation Research Group is a division of the Behavioral Science Center of Sterling Institute, Prudential Building, Boston, Mass.

Graph 6.0

Changes in n-Pow from 8th to 9th grade among CLP and Traditional male and female students.

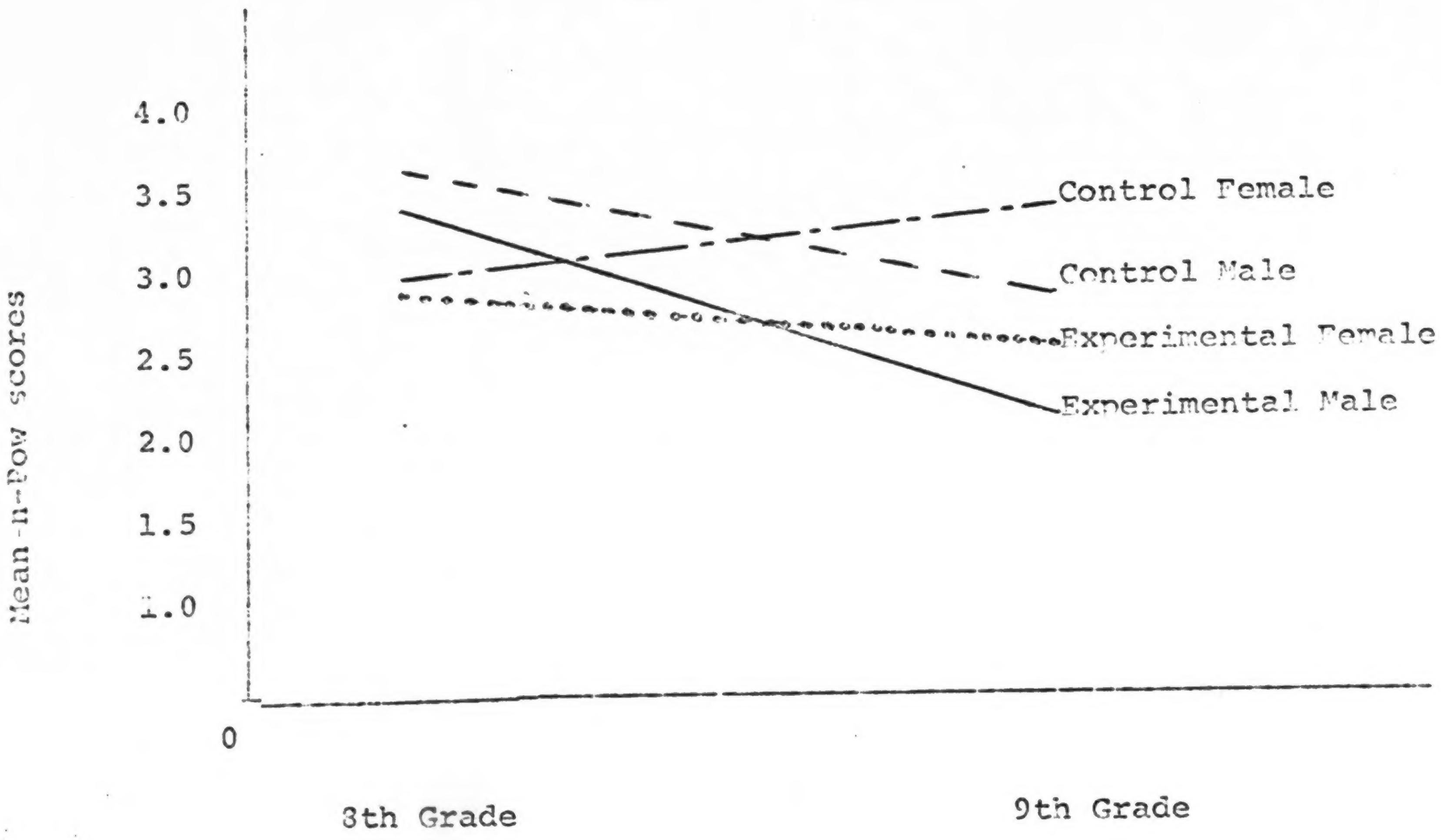


Table 6.2

Mean n-Pow Scores for Experimental and Control Groups (Male, Female, and Total) At End of 8th and 9th Grade

	Exp.	Con.	d	t	p	N
Spring, 1965 8th Grade						
Total	3.19	3.21	-0.02	-0.03	n.s.	42
Male	3.44	3.66	-0.22	-0.25	n.s.	18
Female	2.87	3.00	-0.12	-0.15	n.s.	24
Spring, 1966 9th Grade						
Total	2.50	3.26	-1.76	-1.94	$<.05$*	42
Male	2.17	3.00	-0.83	-1.02	n.s.	18
Female	2.75	3.45	-0.70	-1.06	n.s.	24
Change						
Total	-0.69	0.05	-0.74	-1.08	n.s.	42
Male	-1.27	-0.66	-0.61	-0.54	n.s.	18
Female	-0.25	0.58	-0.83	-0.77	n.s.	24

* Values of t for p=.05, p=.01

	$p < .05$		$p < .01$	
N	Two-tail	One-tail	Two-tail	One-tail
18	2.11	1.74	2.89	2.56
24	2.06	1.71	2.80	2.50
42	2.02	1.68	2.70	2.42

As predicted, the power motivation of CLP students is significantly less than that of the traditional students at the end of three years at Meadowbrook Junior High School. These differences were not apparent at the end of the eighth grade, suggesting that the effects of the CLP on motivation may occur by a cumulative process which reaches significance only at the end of the third year.

Graph 6.1

Changes in n-Ach from 8th to 9th grade among CLP and Traditional male and female students.

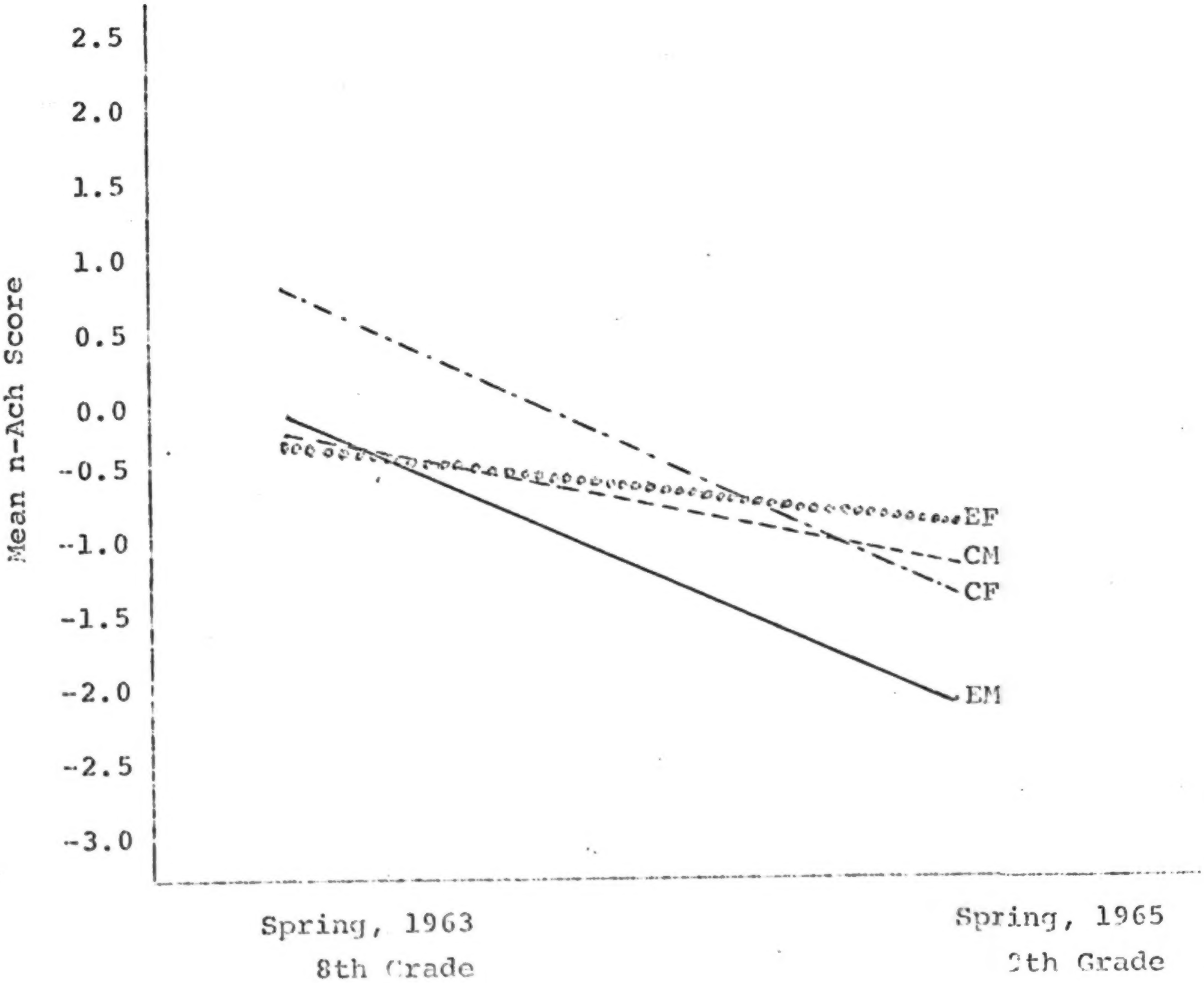


Table 6.3

Mean n-Ach Scores for Experimental and Control Groups (Male, Female and Total) in 1965 and 1966

	Exp.	Con.	d	t	p	N
Spring, 1965 8th Grade						
Total	-0.16	+0.28	-.44	-1.5	n.s.	42
Male	-0.05	-0.22	+.17	+0.38	n.s.	18
Female	-0.25	.67	-.92	-1.80	<.10	24
Spring, 1966 9th Grade						
Total	-1.35	-1.19	-.16	-0.34	n.s.	42
Male	-2.06	-1.11	-.95	-1.79	<.10	18
Female	-0.83	-1.25	+.42	+0.58	n.s.	24
Change						
Total	-1.19	-1.47	.28	+0.529	n.s.	42
Male	-2.00	-0.88	-1.11	-1.693	<.10	18
Female	-0.58	-1.91	1.33	+1.781	.05*	24

* See table of t values

These data strongly suggest an interaction effect of sex and program on changes in achievement motivation. CLP male students and Traditional female students decline in n-Ach significantly more than the opposite sex in the same program. However, all four groups declined in n-Ach to some degree during the third year at Meadowbrook.

Graph 6.2
(n-Aff)

Changes in n-Aff from 8th to 9th grade among CLP and Traditional male and female students.

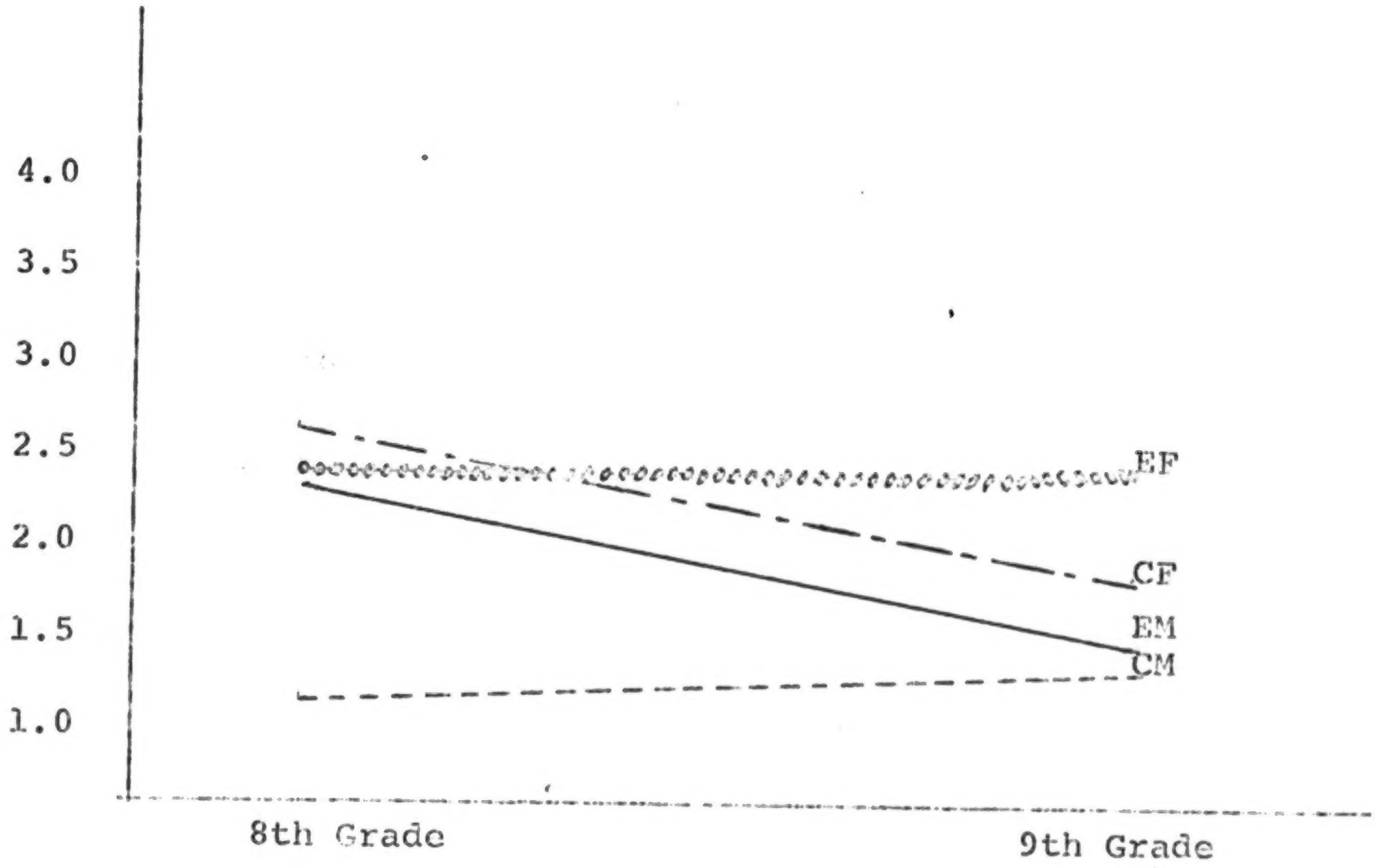


Table 6.4

Mean n-Aff Scores for Experimental and Control Groups (Male, Female and Total)

	Exp.	Con.	d	t	p	N
Spring, 1965 8th Grade						
Total	2.28	1.98	.30	.65	n.s.	42
Male	2.22	1.22	1.00	1.17	n.s.	18
Female	2.33	2.54	.21	.42	n.s.	24
Spring, 1966 9th Grade						
Total	2.00	1.69	.31	.60	n.s.	42
Male	1.50	1.33	.17	.25	n.s.	18
Female	2.37	1.96	.41	.48	n.s.	24
Change						
Total	.28	.28	0	0	n.s.	42
Male	-.72	.11	-.83	1.09	n.s.	18
Female	.04	-.58	.62	.66	n.s.	24

There were no significant differences between the CLP and Traditional students as a whole or as subgroups of males and females at the end of either eighth or ninth grade. There were no significant differences in amount of change in n-Aff, nor were there any significant interaction effects. No changes were predicted.

DISCUSSION

The major finding of this study is that students' motivation can be changed by altering the structure of their learning environment. By changing the locus of decision-making, and by changing the teacher's role from opponent to coach and collaborator, the power concerns of students can be decreased. This finding is unusual in two respects. First, there is very little other evidence in the educational research literature suggesting that motives can be changed by the schooling process. Second, when motive change is attempted, the structure of the learning situation seldom, if ever, is the independent variable. Typically, the instructional content is changed or the teacher's style is altered.

The data also indicate that the relationship between structural inputs and changes in motivation are not always simple and direct. Boys and girls responded differently to the CLP and to the Traditional program in terms of changes in n-Ach. At the most superficial level, it is perfectly reasonable to assume that different types of people will perceive the same situation differently. No learning situation will be ideal for all students. Whether "contracts", programmed instruction, individualized learning, or other modes of teaching are employed, the response of students will vary as a function of many individual differences, e.g., sex, I.Q., attitudes, parental concerns. Although these facts seem painfully obvious, a great deal of educational planning in the country at this time assumes that a new program will be equally beneficial to all students.

In the CLP, for example, it is possible for some students to respond by defining meaningful personal learning goals. For these students, the increased freedom meets their personal needs for exploration. For them it is a delightful way to learn. Other students, however, can view the same "opportunities" as an abandonment by the teachers of their responsibility to teach, a betrayal by their elders to meet their obligation to set standards. This view can breed cynicism and wiley gamesmanship to get away with the best possible marks with the least possible effort. Most likely, there are polar responses to any learning structure. In the Meadowbrook Traditional program, the same type of student who dislikes the CLP might thrive in situations where the teacher sets standards, lectures, and assigns work. Conversely, the students who thrive in the CLP might feel unbearably thwarted and become rebellious in the Traditional program. Something like this seems to be occurring with males and females responding in opposite ways to the two programs. Clearly, it is not sufficient to change only the learning structure without also helping to change students' perceptions of those structural changes. This suggests that something like achievement motivation training for students entering the CLP might be an appropriate introduction.

Not only may some students' personalities be incompatible with the CLP but in practice, some of the CLP goals may be incompatible with each other. To promote creativity, open exploration, and innovative thinking, it is necessary to reduce the penalties for failure, since open exploration does not always lead to important discoveries. Because failure is more likely than success, the consequences for failure must be minimized as much as possible to allow and encourage exploration. Otherwise, students will play it consevatively, and conform to the standards set by teachers in the form of objective tests, essay exams, or standardized examinations with national norms. The Meadowbrook CLP has attempted to solve this problem by grading on effort. If the child tries hard, if he works up to his ability as perceived by the teacher, then he receives an A, whether or not he has succeeded in creating something new or discovering something unique. By definition, this lowering of penalties for failure also decreases the emphasis on external standards. Effort rather than mastery is of prime importance. Regular, concrete feedback on a student's performance measured against objective external standards is less available and less important. Yet, it is these better kinds of cues that can stimulate achievement motivation, and to that degree, a sense of agency.

The shift in grading is a classical trade-off problem At present it appears that it may not be possible to promote simultaneously a sense of agency and increased creativity. The unsolved problem is how to open up the schooling process for student exploration while at the same time maintaining high expectations and standards for performance. Until some system can be developed to foster both goals together, the choice of emphasis must remain a value problem and an educational policy issue. The choice made by Meadowbrook in the CLP is clear in policy and in effects. It has resulted in a decrease in achievement motivation among the males and, insofar as achievement motivation defines agency, a decrease in agency, as well. It has also resulted in a decreased need for power among males and females.

The data also suggest that more could be done to increase affiliation motivation, if that were a valued goal. Specifically, it would involve introducing a number of team projects, completion of which required the coordinated efforts of all members. Scores or grades, as in athletic team sports, would be shared by all members. From the discussion above, it should be clear that there are potential drawbacks. Students' perceptions of the opportunities for team effort would have to be managed so that it was seen as a chance for group accomplishment and not as a way to coast along on others' efforts. Also, team effort may at times be incompatible with individual initiative (agency) and with the type of group support necessary for creative thinking. In perspective, however, it seems clear that a variety of learning structures could co-exist side by side.

Finally, the limitations of this study should be listed briefly. The data were obtained on the CLP during the second, third and fourth years of its operation, and do not reflect changes in policy and procedures since then. The data pertains only to the incidence of spontaneous thought patterns and goals. Other important educational yields were not studied: attitudes, activities outside of school, scholastic achievement in high school. Perhaps the most serious deficiency as an evaluation of the CLP is the absence of a measure of "creativity". This study did show, however, that the CLP significantly affected several important aspects of motivation. Now it remains to manage these motive changes more effectively by preparing students for new learning opportunities.

BIBLIOGRAPHY

Alschuler, Alfred. "How to Increase Motivation through Climate and Structure" Working Paper #8. Available through Achievement Motivation Development Project, 13 Kirkland Street, Cambridge, Mass. 02138

Atkinson, John W. Editor. *Motives in Fantasy, Action, and Society*. Princeton, New Jersey: D. Van Nostrand Company, Inc., 1958

Burris, R. "The Effect of Counseling on Achievement Motivation". Unpublished doctoral dissertation, Indiana University, 1958

Clayton, B.H. "The MBA and Small Business", Manufacturing Group IX; *Harvard Business School*, 1965.

Hall, J. and D.C. Jones. *British Journal of Sociology* (1) 1950, pp. 35-55.

Jacobs, Phillip E. *Changing Values in College*. New York: Harper and Row, 1957.

Kolb, David A. "An Achievement Motivation Training Program for Underachieving High School Boys". *Journal of Personality and Social Psychology* 2(6) (1965) pp. 783-792.

McClelland, D.C., Atkinson, J.W., Clark, R.A., and E.L. Lowell. *The Achievement Motive*. New York: Appleton-Century Crofts, Inc., 1953.

McClelland, D.C., Baldwin, A.L., Bronfenbrenner, U., and F.L. Strodtbeck. *Talent and Society*. Princeton, New Jersey: D. Van Nostrand Company, Inc., 1958.

McClelland, David C. *The Achieving Society*. New York: D. Van Nostrand Company, Inc., 1961.

McClelland, D.C. "Longitudinal Trends in the Relation of Thought to Action". *Journal of Consulting Psychology*, 3(6) (1966) pp. 470-483.

McClelland, D. "Achievement Motivation Training for Potential High School Dropouts" Working Paper #4. Available through Achievement Motivation Development Project, 13 Kirkland St., Cambridge, Mass. 02138.

McClelland, D.C. and D.G. Winter. Developing an Achieving Society. Free Press, 1969 (in press)

Progress Report of the Continuous Learning Program, 1965 from Meadowbrook Junior High School, Newton, Mass.

CHAPTER 7

CONCLUSIONS:

RESEARCH SUMMARY AND PREVIEW OF FORTHCOMING RESEARCH

The research studies presented in the preceding four chapters are preliminary efforts and findings. Additional research based on these findings has been inaugurated. The specific research questions are listed in the individual reports. In this chapter the current status of our research is summarized in terms of the three broad research questions now being studied. Thus, this chapter is both a summary and preview of research.

1. What course inputs produce increased motivational yields?

Following the demonstration by Kolb (1965) and McClelland (Chapter 3, above) that adolescents' achievement motivation could be developed, we shifted our research strategy in order to find out what course inputs produce the changes. The research design was guided by several questions. First, are inputs which emphasize action-learning as opposed to purely cognitive learning more effective with younger students? Is cognitive learning, on the other hand, more effective with older students? This hypothesis is based on several developmental theories which hold that prior to the age of about 12, children learn most effectively through the physical manipulation of objects in their environment. Subsequently they are better able to work with abstract concepts such as coding their own thoughts, meaningfully anticipating a more distant personal future and distant goal setting. A second question stems from the fact that research on achievement motivation in women always has been considerably less clear. Most of the past reported research results are true only for men. To date, almost no n-Ach courses have been given to women. We decided to include a sample of girls in order to see whether this type of training is effective for them as well, and if so, what type of training produces what type of results.

In the summer of 1966 four n-Ach courses were given to a total of 50 boys, age 9-15 (mean = 12 years). In all four courses 10 of the 12 inputs were held constant. One group received training in the n-Ach thought pattern and the n-Ach action characteristics. The second group received training in the n-Ach action characteristics but not the thought pattern. The third group received training in the thought pattern but not the action characteristics. The fourth group(control) received affiliation training rather than achievement training. This same design was repeated during the academic year of 1966-67 with three changes. 1. The population was older, (mean age = 15). 2. The group consisted of boys and girls, and 3. the control group received training in "fate control" instead of "affiliation".

The follow up data on these groups is not complete at this time, nor is the data we have completely analyzed. However, some general trends in the data are emerging.

1. For the younger boys, on a series of measures obtained about 8 months after the course, the two groups who were trained in the action characteristics have done consistently better than the two groups who did not receive action training.

2. For the boys in older groups, those who received training in the n-Ach thought pattern have done better on a number of yield measures than the older boys not trained in the n-Ach thought pattern.

3. For the girls, the group which received training in both n-Ach thoughts and actions, and the group which got training in fate control (neither n-Ach thoughts nor actions) did better than the two groups which got either n-Ach thought or action training. This is a particularly complex, confusing result that is typical only in that for twenty years the n-Ach research on women is always complex and confusing.

It does appear that different types of training are most effective with different groups (younger vs. older, male vs. female). There appears to be a triple interaction between type of person taking the course, the emphasis on the course itself and the context in which the aroused motive is applied, (e.g., school grades, deportment, test scores), vs. non-school (hobbies, use of leisure time, travel). We are continuing to collect yield data on these groups in order to clarify these complex interaction effects.

2. What climate and structure inputs increase motivational yields?

The theory and research presented in Chapter 4 begins a new approach to evaluation in education. Structure and climate seldom are the independent variables in educational research. When they are, the yields studied almost invariably are how much content is learned. From our point of view the major yields should be motivational yields, e.g., thought patterns, action patterns, attitudes. The theoretical rationale for this position is contained in Chapter 4. From common sense, it simply stands to reason that if students interact with their teachers and peers in new ways, and have new kinds of responsibilities for learning everyday for two to three years, it is bound to influence the way they think about things. Consider in comparison the history of research with the Thematic Apperception Test. Typically, the experimental arousal conditions last no more than a few minutes to an hour. Systematic differences in fantasy occur as a result. (McClelland, et. al., 1953; Atkinson, et. al., 1958). We have been attempting to identify the systematic differences in fantasy which result from a 2 to 3 year arousal condition.

The studies on Duluth (Chapter 5) and Meadowbrook (Chapter 6) are preliminary attempts to see if n-Achievement, n-Affiliation and n-Power were effected by the learning structures and climate. We used existing coding systems in this phase of the research. The next phase is more exploratory. Using sub-samples of the total populations we may derive new coding systems inductively which reflect the changes in fantasy life. The new coding systems may be cross validated on the remainder of the experimental populations. In the case of Meadowbrook J.H.S., predictions could be made about the attitude and behavior of the students in 1968-69, three years after the TAT's were obtained. This research strategy would allow us to identify the motivational impact of learning structures which emphasize mastery (Duluth) and satisfaction (Meadowbrook).

3. What educational climates maximize achievement motivation course yields?

McClelland's and Winter's research (1969, in press) has demonstrated the importance of the combination of n-Ach courses and environmental opportunity in increasing n-Ach. The research on course inputs (Question 1, above) and environmental inputs (Question 2, above) examine the impact of these inputs separately. In 1967-68 we began to examine the effects of combinations of course inputs with different learning environments. Specifically, four n-Ach courses were given. Two n-Ach courses were modelled after the "contract system", or learning by objectives as described by Mager (1962) and implemented by the Duluth School System, one of the ES-70 schools. This set of courses emphasized "mastering" a minimum level of motivational training, completing course units by a self-chosen deadline, choosing whatever media the student desired to use to master the material, etc. Two other n-Ach courses emphasized student satisfaction. There were no mastery tests, no deadlines, no contracts and no requirements. The course attempted to convey the material in whatever ways were most interesting, involving and exciting for the students. In addition to the n-Ach courses, some of these students took a specially re-structured algebra class, modelled after the "math game", described in Chapter 4. Thus, the research design is as follows:

	n-Ach Training		no n-Ach
Algebra Class Climate	Mastery Oriented	Satisfaction Oriented	
Algebra class structured for n-Ach	n = 25	n = 25	n = 50
Traditional Math Class	n = 25	n = 25	n = 50

On the basis of research to date we have the following hypotheses:

a. Students in algebra classes structured for n-Ach will learn significantly more algebra then students in the traditional classes.

b. Students in the specially structured algebra classes who also received n-Ach training will learn significantly more math than those just in the special math class and more than those in the traditional math class, and will show greater long-term gains in n-Ach action tendencies, attitudes and motivation than those who just took the n-Ach course.

c. Students who took the "mastery" n-Ach course will show higher short-term gains in n-Ach and lower long-term gains in n-Ach than the students who took the "satisfaction" n-Ach course.

In other words, we predict that the retention rate will start higher and drop rapidly for the "mastery" students. The n-Ach of the "satisfaction" students will start lower but continue going up for a long period of time. If this is so, it has major implications for educational testing and teaching. It may be that focusing on short term, end of semester gains decreases the likelihood of long-term gains. Teaching for student satisfaction may sacrifice short-term test gains, but maximize long-term gains.

In addition to the research conducted at Harvard, we have helped start several other separately funded motivation research projects. The results of these projects will be combined with our own in the final report in 1970. It is sufficient here merely to indicate the questions being investigated: Is n-Ach training for Headstart children and their mothers effective in stimulating achievement behaviors in the early primary grades? Is n-Ach training plus individually paced instruction (IPI) effective in increasing how much 6th grade urban ghetto children learn? What are the interaction effects on motive acquisition of residential vs. school settings for the n-Ach courses, 8th vs. 10th grade students (all male), high vs. low socioeconomic status students, and different levels of intellectual development?

A PERSPECTIVE ON THE ACHIEVEMENT MOTIVATION DEVELOPMENT PROJECT (AMDP)

At the end of the third year of operation it is appropriate to put our work in perspective. At this time we do not have empirically documented, strikingly obvious and overwhelmingly clear evidence that we have changed the lives of adolescents. The data we do have is consistently tantalizing, consistently positive and statistically, if not always socially significant. Although we do not have definitive proof of the efficacy of these methods for adolescents (we do have proof for adults, McClelland and Winter, 1969), we are making steady progress towards that proof.

Let me be more specific. Kolb (1965) showed that the n-Ach course was effective for bright high SES students as measured by changes in subsequent grades. McClelland (1968) showed that n-Ach was effective for generally low SES students in terms of grades and in terms of reorienting them to serious long term goals. But the actual increase in grades was small, albeit statistically significant. Also, this group did not include the dropouts from the n-Ach course. In all subsequent n-Ach courses the dropout rate has been reduced from 50% to under 10%. We learned how to get and keep the attention of the students in the course. Subsequently we began to worry about the clear lack of fit between n-Ach actions and the demands of normal school environments. The students we trained seemed to be using what they learned primarily outside of school rather than in school to improve their grades. We began to look more carefully at the non-school yields on the one hand, and on the other we began to restructure the learning environment to be more conducive to n-Ach. This new direction first meant documenting the independent contributions of learning environments to changes in motivation, i.e., the Duluth and Meadowbrook studies now in progress. Finally, we returned to giving n-Ach courses by combining them with a specially restructured learning environment at Broad Meadows Junior High School.

What are the results of these new directions? Besides the research reported in the preceding chapters, data will be in and analyzed in the coming two years. Thus very little new can be said now based completely on empirical evidence. However, some of the evidence is in and it appears positive. Interviews conducted in August and September, 1968, with the students trained in 1966-67 suggest that the course had a sleeper effect for many students, that they are applying the concepts now, mostly outside school. We also have data on gains in mathematics from the Broad Meadows research project. It appears that students in math classes restructured for n-Ach learn significantly more than students in traditional algebra classes as measured by the ETS Cooperative Algebra Tests series. Also, the students who received n-Ach training and also were in the special algebra classes appear to learn significantly more than the traditional and restructured-class-only students. This is a replication and extension of the dramatic changes reported in chapter four of this section.

The data collected and analyzed in the coming year, (September 1968-September 1969) will be critical in determining just how much progress has been made and how extensively it should be pursued in the final year of the project, 1969-70. We do know that we are not in the position of having to explain away null results.

It may be helpful to compare the current status of research on motive acquisition with the research on Sensitivity Training, one of the most popular Psychological Education courses for adults and by far the most thoroughly researched.* Whereas the results of n-Ach training for adult "managers" are clearly positive (McClelland and Winter, 1969, in press) the effects of Sensitivity Training for "managers" are highly equivocal. (Campbell and Dunnette, 1968). Although sensitivity groups often produce changes in the personal lives of adults, it is generally agreed both by researchers and trainers that these changes cannot be predicted in advance and do not always occur in one's work situation. Because changes cannot be specified in advance, it is nearly impossible to plan systematic research which evaluates the training inputs in terms of the resultant yields. It is also difficult under these conditions to specify the types of people for whom the training will be most effective, and the effect of the job environment in fostering, inhibiting or shaping those changes. Compared to the best existing research on Sensitivity Training, AMDP is conducting highly sophisticated and systematic research. That in itself however would not be a selling point if sophisticated and systematic research produced no noticable effects. This is not the case.

With very few exceptions the history of educational attempts to produce major psychological changes in adolescents is a rather depressing one. The long-term effects (one to three years) of educational inputs are rarely different from normal maturation. In other words the base rate of success against which to compare the effectiveness of n-Ach training is very low. In this perspective the background of research on n-Ach training for adults and the initial results from AMDP are reasons for cautious optimism.

There is a tendency for university-based researchers to qualify every sentence they utter or write, viz., "cautious optimism". For a moment I would like to depart from this professional stance and place this research in the perspective of one emerging trend in education.

Psychological Education is a nationwide movement rapidly gaining in momentum. Psychological Education courses attempt to foster specific types of personal growth through a variety of educational and psychological techniques. At the present time there are courses in creativity, body awareness, meditation, self-actualization, self-esteem, self-awareness, achievement motivation, value clarity, interpersonal sensitivity, moral development and many other courses with vague, attractive and universal sounding titles.* There are at least thirty-five private training organizations that are offering these courses to the general public, including Esalen Institute and its affiliates, the National Training Laboratories and Western Behavioral Sciences Institute. In the last three years there has been a virtual spate of books for individuals and groups on how to go through a series of exercises and emerge affectively developed, spiritually cleansed and bodily aware. The national press (LOOK and LIFE most recently) are featuring stories about this new movement and calling attention to its potential. There are several projects that are funded to introduce this type of education into schools. Clearly the riots and assassinations are doing for Psychological Education what Sputnik did for the academic "new" curricula ten years ago. Schools are realizing their responsibility for directly promoting psychological growth. The courses to implement this felt responsibility are available. It appears to be simply a matter of time before these courses are widespread in American education.**

---

*The comparisons made are based on the recent article by J.P. Campbell and M. Dunnette. "Effectiveness of T-Group Experiences in Managerial Training and Development." Psychological Bulletin, 70(2) (August, 1968) pp. 73-104.

To my knowledge, without exception, there is no strong scientific evidence that any of these training programs have any major long term effects on the lives of adolescents.***

Given the gaining momentum of Psychological Education and the lack of evidence supporting the efficacy of these courses, AMDP occupies a position of some importance. Our goal is not to debunk the creative efforts of other educational innovators. To the contrary, achievement motivation training is clearly in the ranks of Psychological Education courses. We are attempting to demonstrate the preconditions that must be met before these courses can be effectively taught in schools. What we find out about how to increase motivation should generalize to how to increase other aspects of mature adult functioning through Psychological Education courses. From a general policy point of view it is in the public interest to have this type of research supported by the Office of Education. This is not a plea for continued support of AMDP regardless of our results in the coming year. It is a suggestion that other research projects in addition to AMDP be encouraged to conduct similar research and development programs.

---

*For a relatively complete list of books, articles, programs, films, organizations, projects, and people, see the bibliography following the first chapter of the teachers' manual.

**For a vivid description of these possibilities, see George Leonard's article in the October, 1968 issue of LOOK, "Visiting Day, 2001".

***See Psychological Education, Chapter 1 in the teachers' manual which follows for a review of this point.

BIBLIOGRAPHY - CHAPTER 7

Atkinson, J.W., et. al. (Eds.) Motives in Fantasy, Action and Society. Princeton: Van Nostrand (1958).

Campbell, J.P. and M. Dunnette. "Effectiveness of T-Group Experiences in Managerial Training and Development." Psychological Bulletin, 70(2) (August, 1968) pp. 73-104.

Kolb, D.A. "An Achievement Motivation Training Program for Underachieving High School Boys", J.Pers.Soc. Psych. 2(6) (1965) pp. 783-792.

Leonard, George. "Visiting Day 2001", LOOK, (October, 1968)

Mager, R. Preparing Instructional Objectives. San Francisco: Fearon Press, (1962).

McClelland, D.C. et. al. The Achievement Motive. New York: Appleton-Century Crofts, Inc. (1953).

McClelland, D.C. "Achievement Motivation Training for Potential High School Dropouts", (1968). Unpublished paper available from the Achievement Motivation Development Project, Harvard University, 13 Kirkland Street, Cambridge, Massachusetts 02138.

McClelland, D.C. and D.C. Winter. Developing an Achieving Society. New York: The Free Press (1969).